

Designating 8-Hour Ozone Areas

National Ambient Air Quality Standard (NAAQS)

A Clean Air Act Task Force stakeholder dialogue regarding the Governor's recommendations to EPA identifying areas of Wisconsin attaining and not attaining the standard.

June 18, 2003

8-Hr Designation - Clean Air Act

Designating areas -

Clean Air Act - Sec 107(A)(i)

“Nonattainment” - any area that does not meet (*or that contributes to ambient air quality that does not meet*) the national primary or secondary ambient air quality for the pollutant.

8-Hr Ozone NAAQS - Full Timeline

- July 1997 – EPA Finalizes NAAQS for Ozone (& PM_{2.5})
- May 2003 – EPA Proposes an 8-Hour Ozone Implementation Rule
- ➡ July 15, 2003 – Governor Recommends Nonattainment Areas
- December 2003 – EPA Proposes Nonattainment Areas
- January 2004 – EPA Finalizes 8-Hour Ozone Implementation Rule
- April 2004 – EPA Finalizes Nonattainment Designations
- May 2003 through April 2007
 - Regional Planning Organization Conducts Integrated Analysis of Ozone, Fine Particles & Regional Haze
 - WI, IL, IN, OH, MI, Tribes, Federal Land Managers, & LADCO
 - Stakeholder Involvement throughout Process
 - Parties Agree on Regional Plan
- April 2007 – States Submit SIP
- 2009-2010 – Attainment Date

Area Designations - Important Points in Governor's Recommendation

- **Provides Outline for Nonattainment Area(s)**
 - Focuses Monitoring, Outreach, Planning and Controls
 - Sets area based on existing monitored nonattainment
 - Sets stage for area “classifications” under EPA’s Implementation Rule
- **Recommends Attainment Areas**
- **Should recommend discrete Nonattainment Area Boundaries**
(Internal Boundaries for areas with multiple counties)
- **Should clarify preferred treatment of potential Interstate Areas**

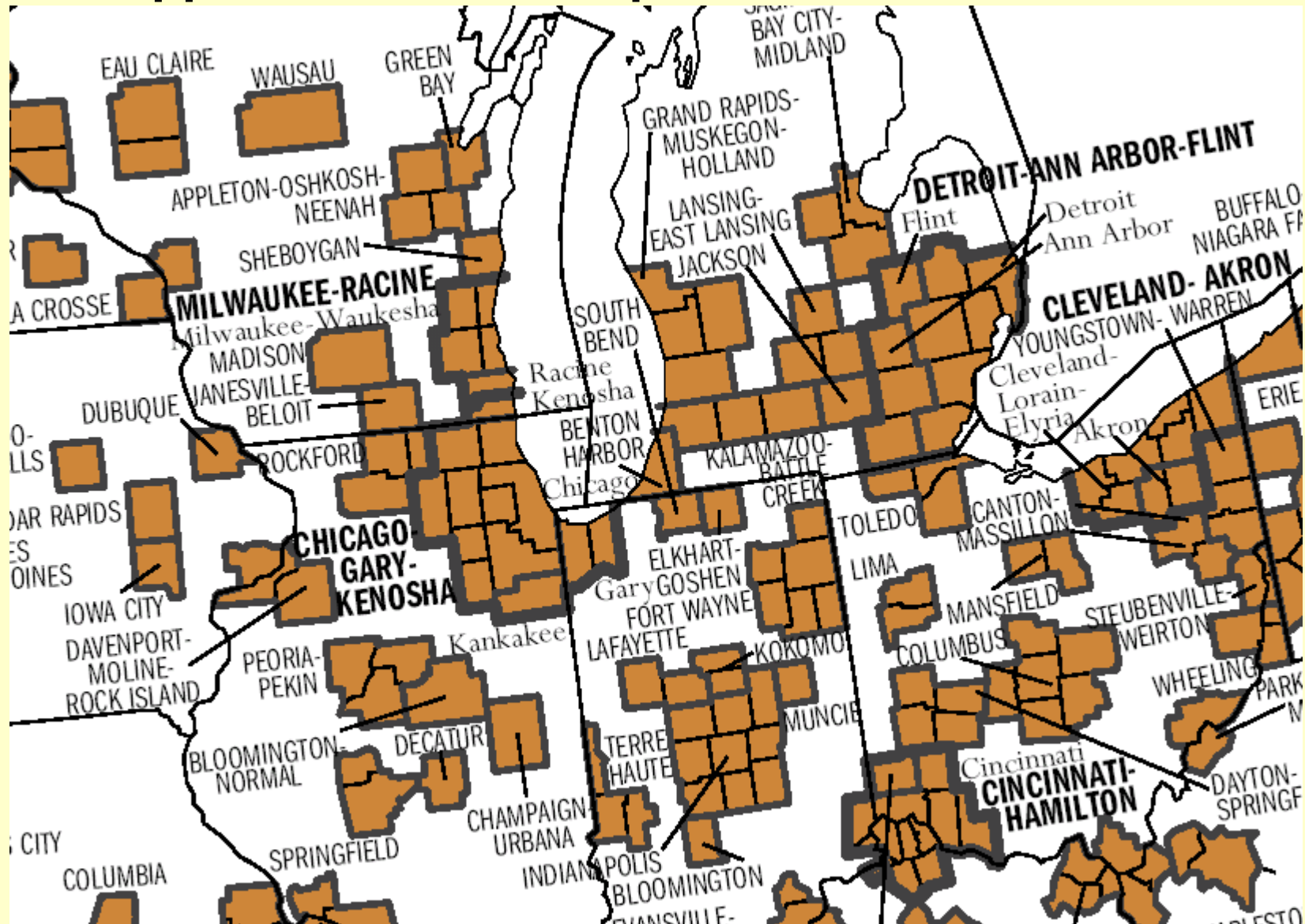
Designation Recommendation - Sideboards

- Default area boundaries are MSA/CMSA-wide, or an isolated rural county where violation is monitored
- Any Wisconsin designated area has to include a violating monitor by statute, areas may be broader than one county
- EPA requires some level of “contribution” assessment by the state - EPA sets criteria and reviews for consistency
- Technical analysis needed as part of the boundary definition, especially if recommending narrowed (or enlarged) metro area boundaries
- 120 Day Minimum Window between EPA designation proposal (Dec 2003) and EPA final (April 2004) - state can comment on own and upwind area proposals

EPA Criteria for Recommending Area Boundaries & Changing Boundary Defaults

- Defined Metro Area (MSA/CMSA)
- Monitored AQ Data Trends in area and region
- Regional ozone trend and typical conditions during violation episodes
- Relative Population Density
- Relative Travel Density & Commuting Patterns
- Total Emissions by County
- “Contribution” => Modeled Impact Assessment based on directional emissions impact (“footprints”)
- Implemented Regional Programs Impact
 - ⇒ ***even with all current state & federal programs (including NOx SIP), project 2010 violation for Door, Manitowoc, & SE Counties***

Upper-Midwest Metropolitan Areas



Key Criteria 2 - Monitored State Air Quality Data & Trend

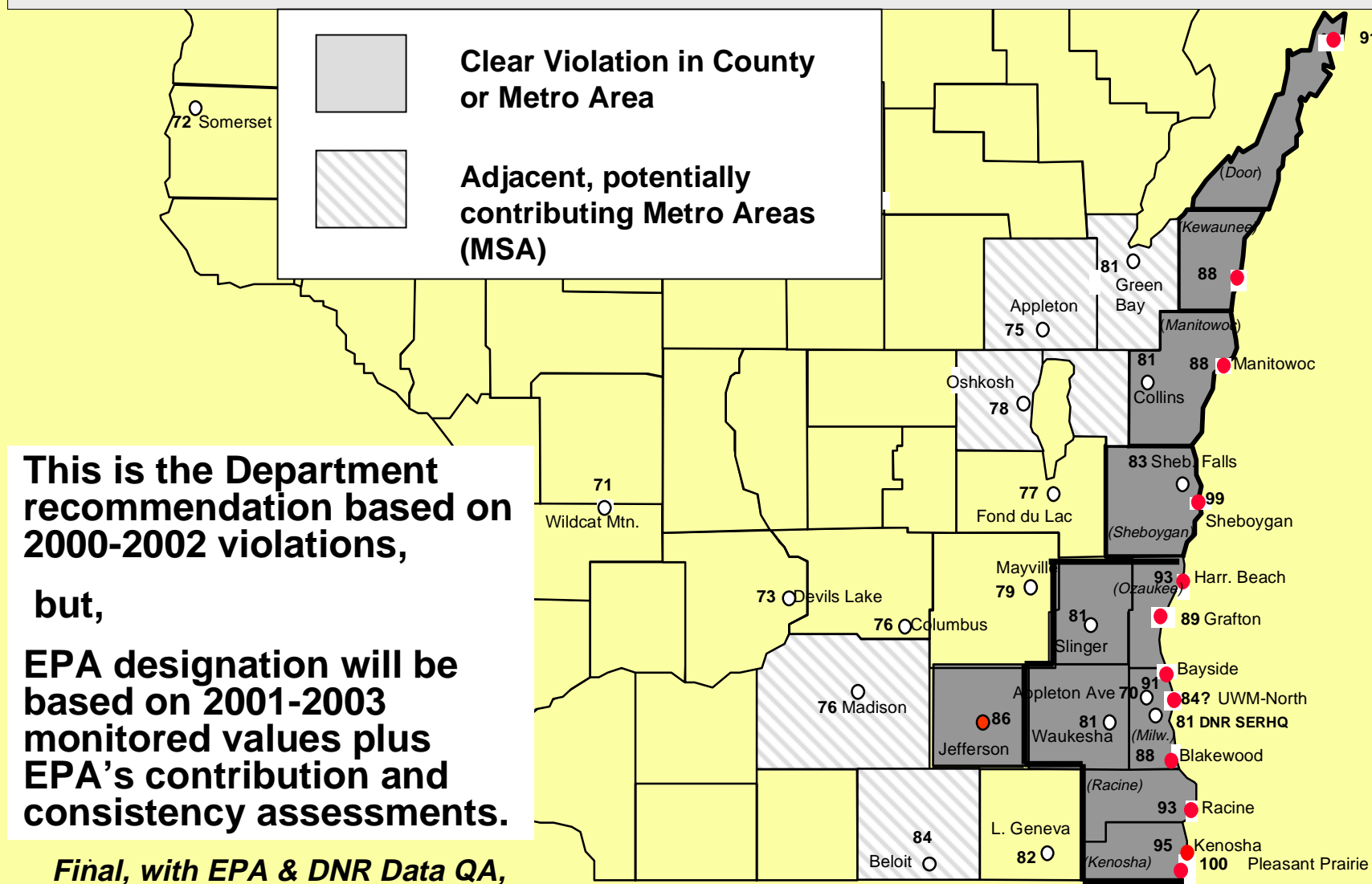
June 17, 2003

The following two maps portray the two key air quality data trends related to 8-hour ozone designation.

The first is the final QA'd map of the existing 2000-2002 three year monitored values by site with an indication of the attainment and nonattainment recommendations these have produced. The recommendation reflects an interpretation of what EPA "default" or base maps look like before consideration of further contribution or area boundary criteria. EPA is maintaining a presumptive guidance to designate metropolitan areas as a whole for the 8-hour ozone standard.

The second map reflects the most current air quality trend for ozone based on the 2001 and 2002 data and identifies the "critical values" for 2003 for the areas surrounding the base identified nonattainment area(s) that would cause a violation status for the monitors. The map has outlines the metropolitan areas so the viewer can understand the areas likely to be designated if the critical values occur during 2003. The areas with only 1 value are expected to be designated nonattainment based on the longer ozone trend in the region. EPA plans to make final designations in light of the full 2003 ozone season for areas with less than full year seasons.

2000-2002 Monitored AQ Nonattainment Base - The Department's Recommendation to the Interagency Task Force



This is the Department recommendation based on 2000-2002 violations,

but,

EPA designation will be based on 2001-2003 monitored values plus EPA's contribution and consistency assessments.

*Final, with EPA & DNR Data QA,
6/16/03*

2001-2002 AQ - The Current Trend by Site **2000 was a very cool summer with low ozone levels.**

**2001 and 2002 Average Annual 4th
 Highest Peak Daily Running 8-Hr
 Ozone Values, and,**

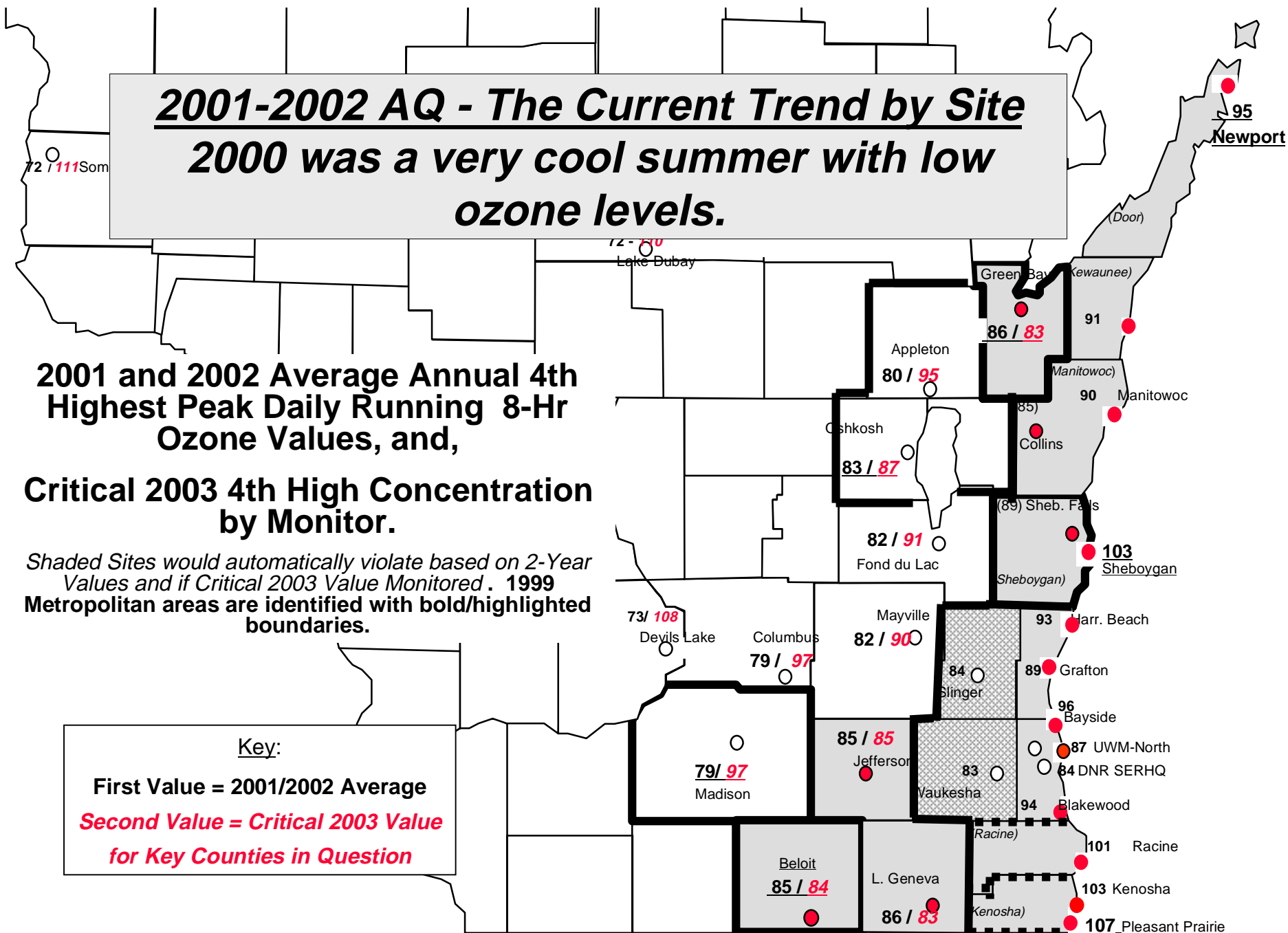
**Critical 2003 4th High Concentration
 by Monitor.**

*Shaded Sites would automatically violate based on 2-Year
 Values and if Critical 2003 Value Monitored . 1999
 Metropolitan areas are identified with bold/highlighted
 boundaries.*

Key:

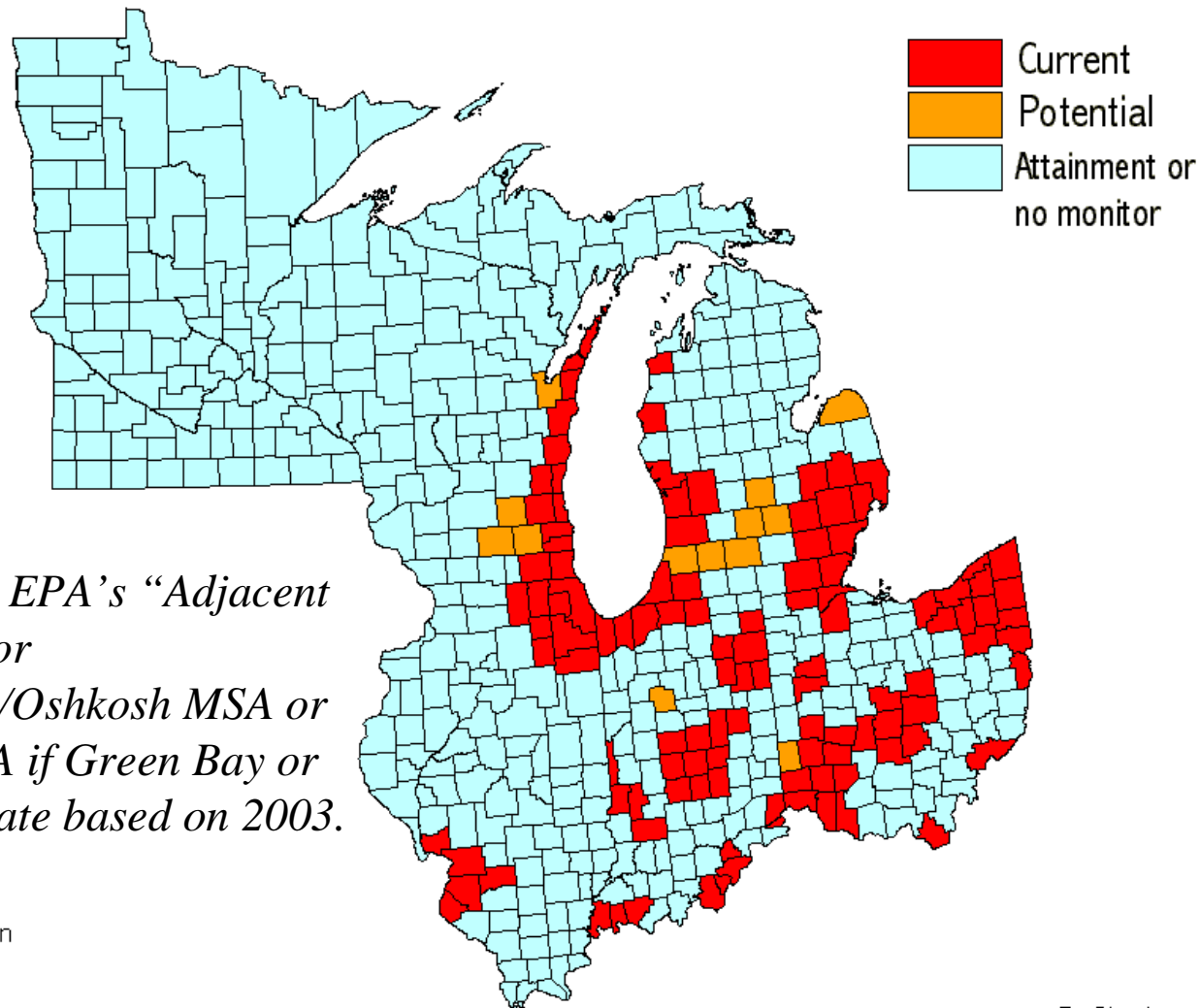
First Value = 2001/2002 Average

**Second Value = Critical 2003 Value
 for Key Counties in Question**



Working EPA Maps - Region 5 8-Hr Ozone Status

Violating Ozone Monitors: Current (2000-02) &
Potential (2001-03) with Associated Areas



Does not address EPA's "Adjacent MSA" criterion for Appleton/Neenah/Oshkosh MSA or the Rockford MSA if Green Bay or Rock County violate based on 2003.

USEPA Region 5
Air and Radiation Division
Air Monitoring Section
4/22/03
Data: 2000 - 2002

R. Charles

Key Criteria 3 - Regional ozone conditions and windflows during elevated ozone episodes

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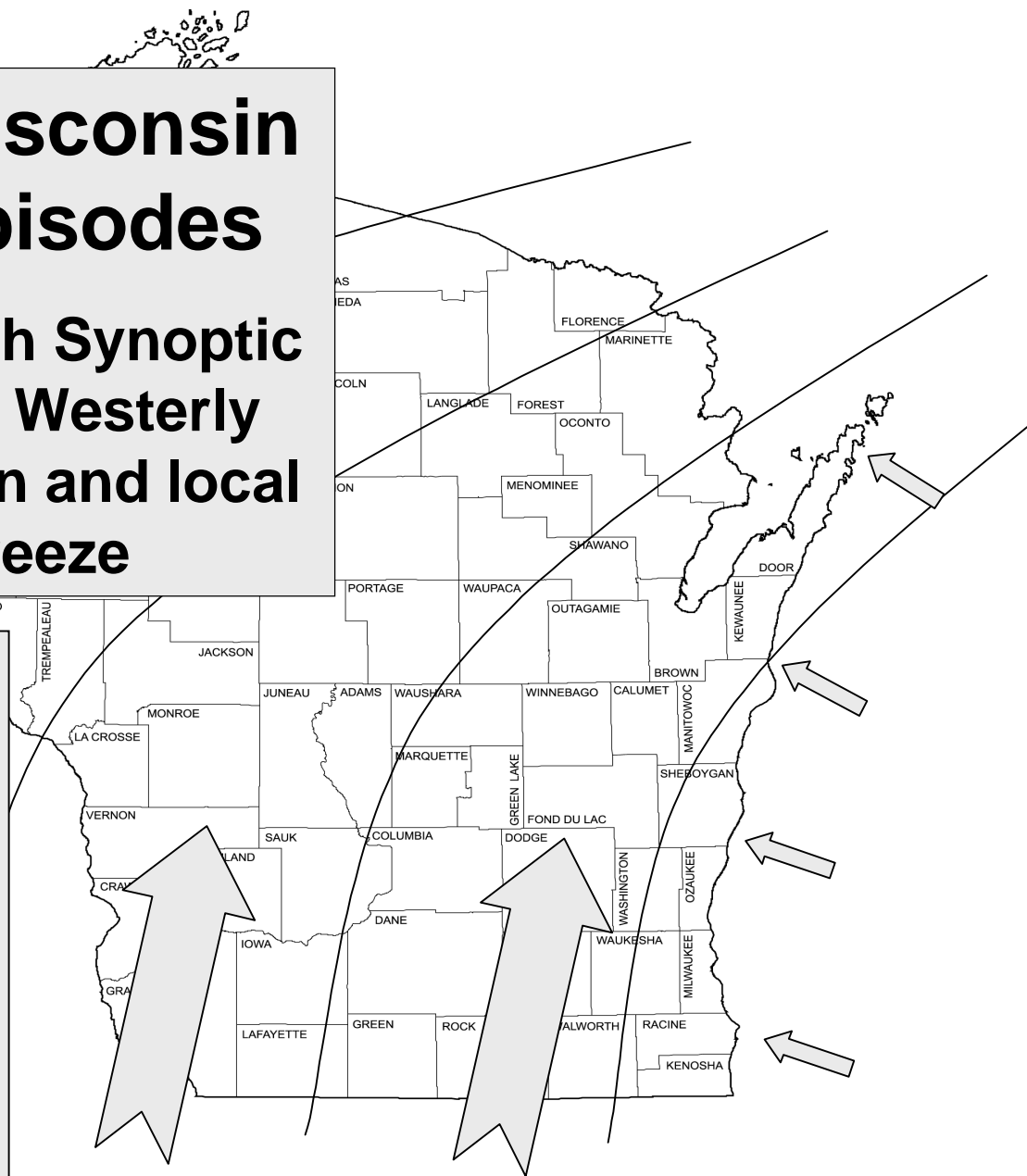
The following maps portray the EPA AIRNOW regional ozone footprint for several days in 2001 and 2002 with elevated and violating ozone values in WI. Included is a drawn characterization of the background wind patterns during elevated ozone conditions and two “typical” modeled flow patterns for winds during ozone episodic conditions. The first is the “surface” layer windfield. The second is the “mixing layer” windfield where much of the ozone precursor transport occurs.

Typical Wisconsin Ozone Episodes

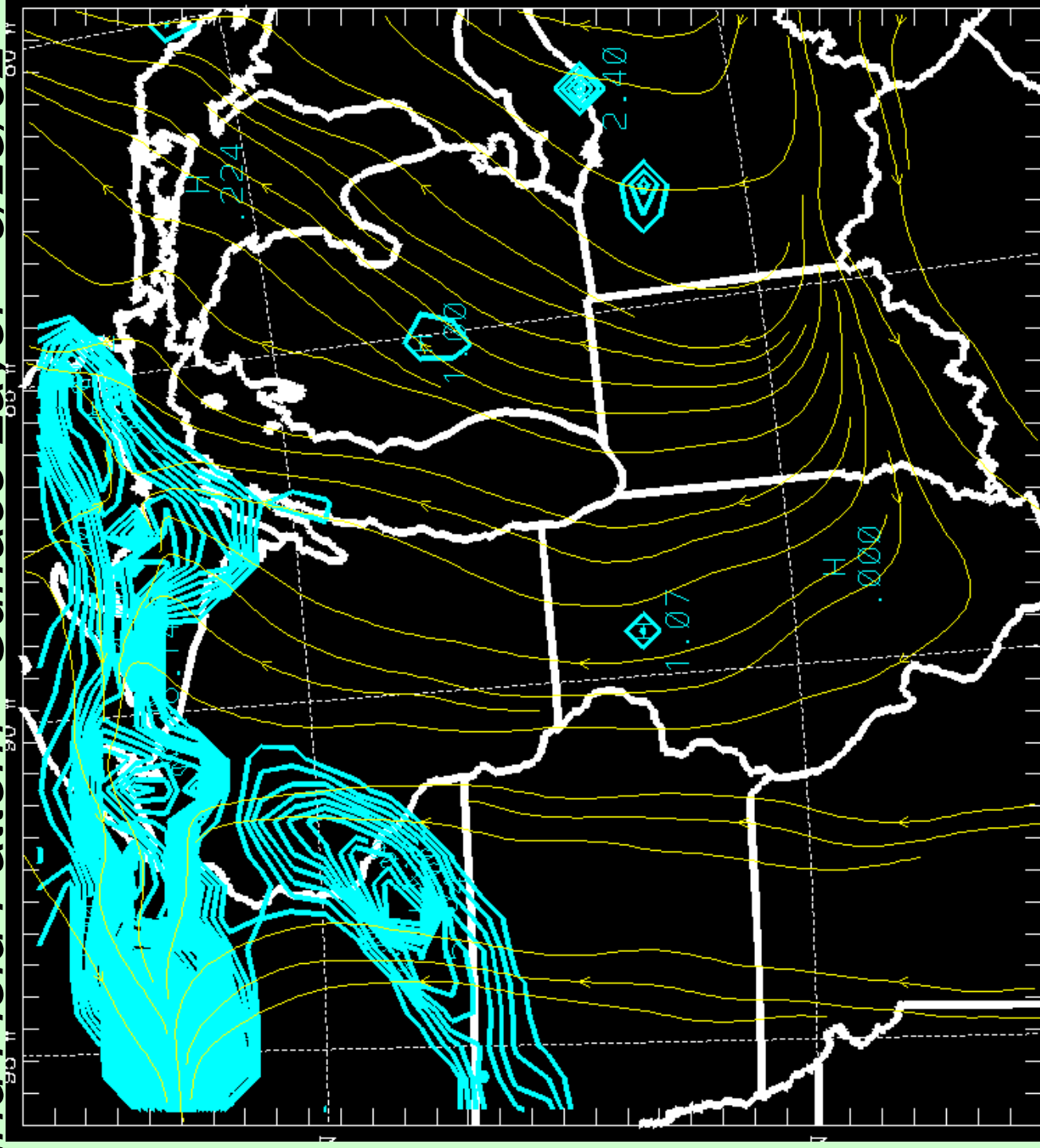
- Hot Days with Synoptic Southerly to Westerly Wind Direction and local Lake Breeze

Occasional

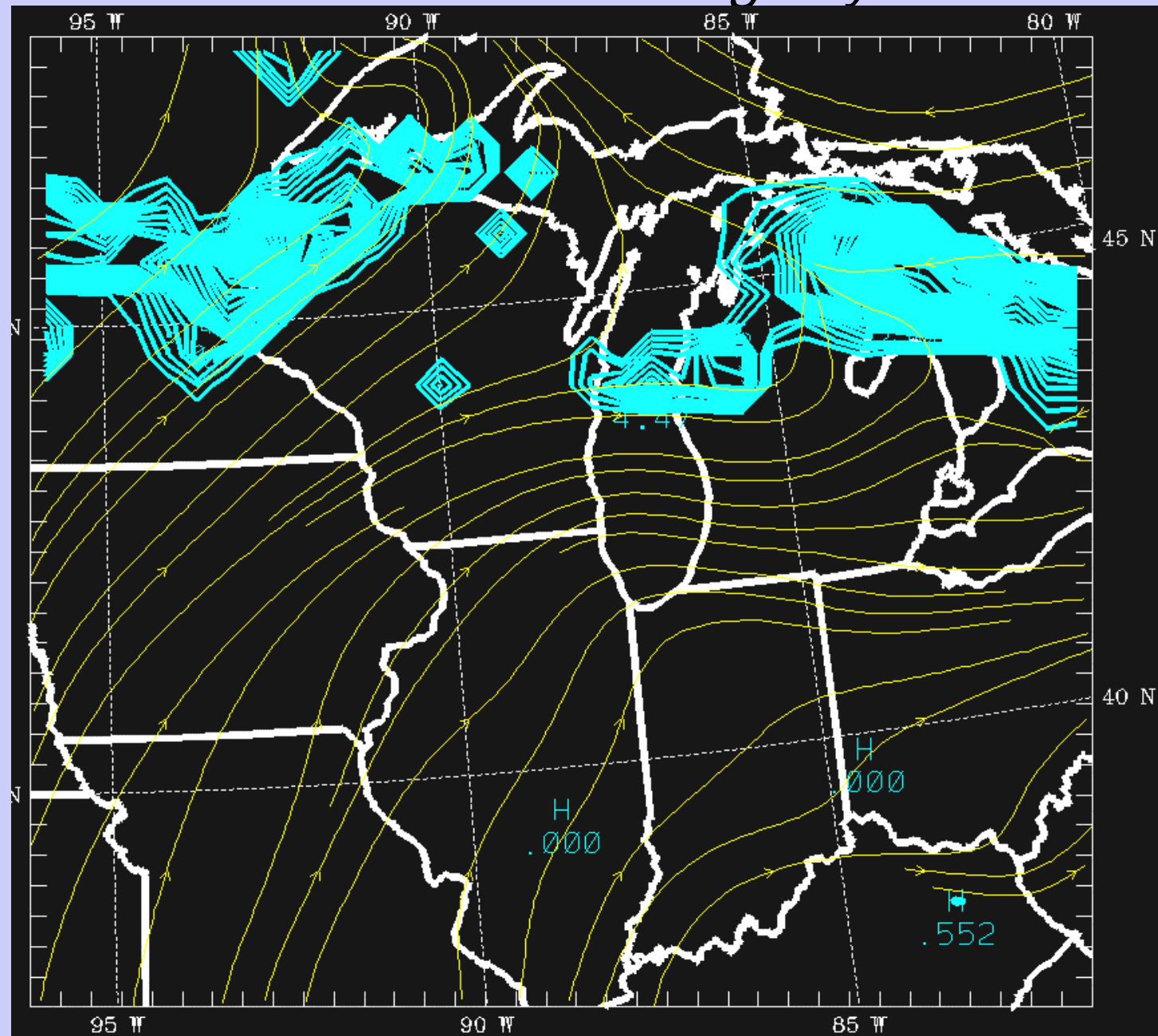
More
Common



Wind Field Pattern - Surface Layer - 6/23/02 - 12:00



Wind Field Pattern - Mixing Layer - 6/24/02 - 12:00



*Note West to
East
Transport in
Mixing
Layer...*

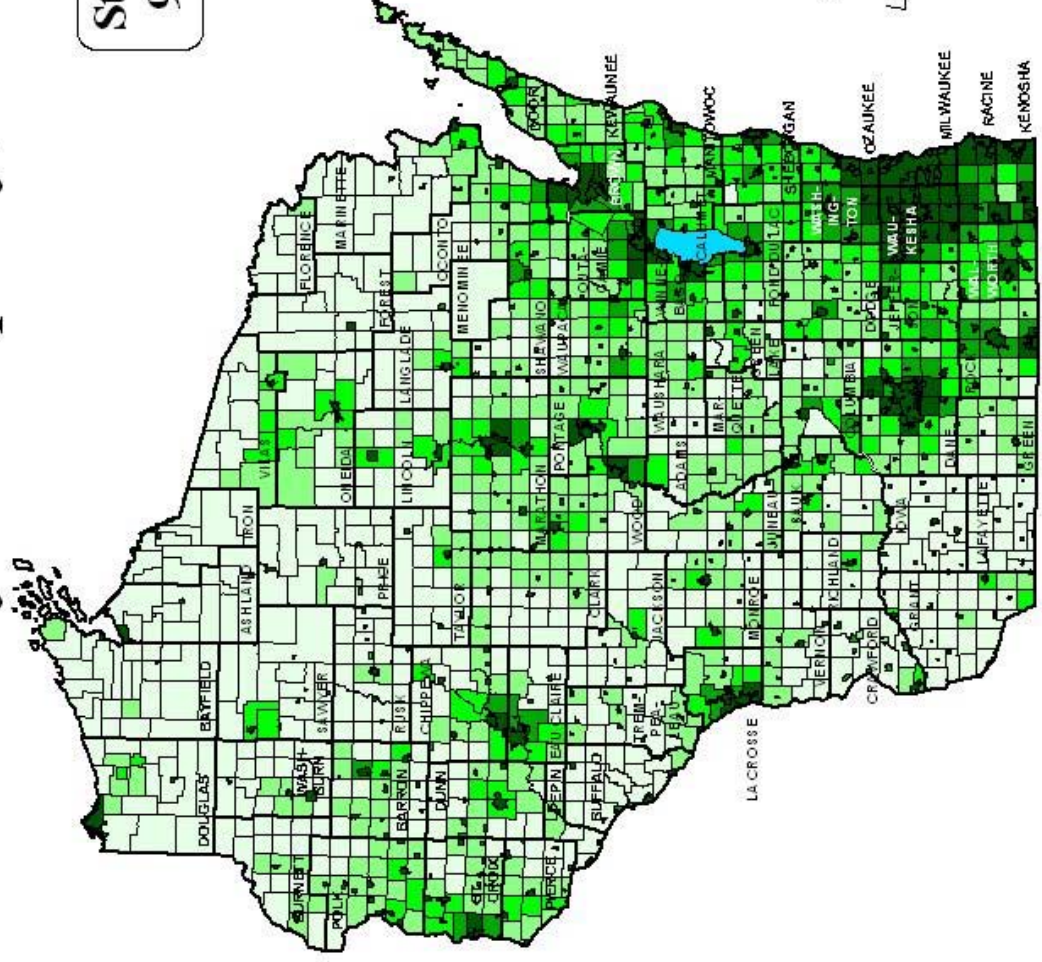
Key Criteria 4 - Population, Density and Growth Considerations

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The following maps portray relative population density and county population totals based on the 2000 census.

Estimated Population Density in Wisconsin, by Municipality, January 2000

**State Estimated Density, 2000:
97.7 persons per square mile**



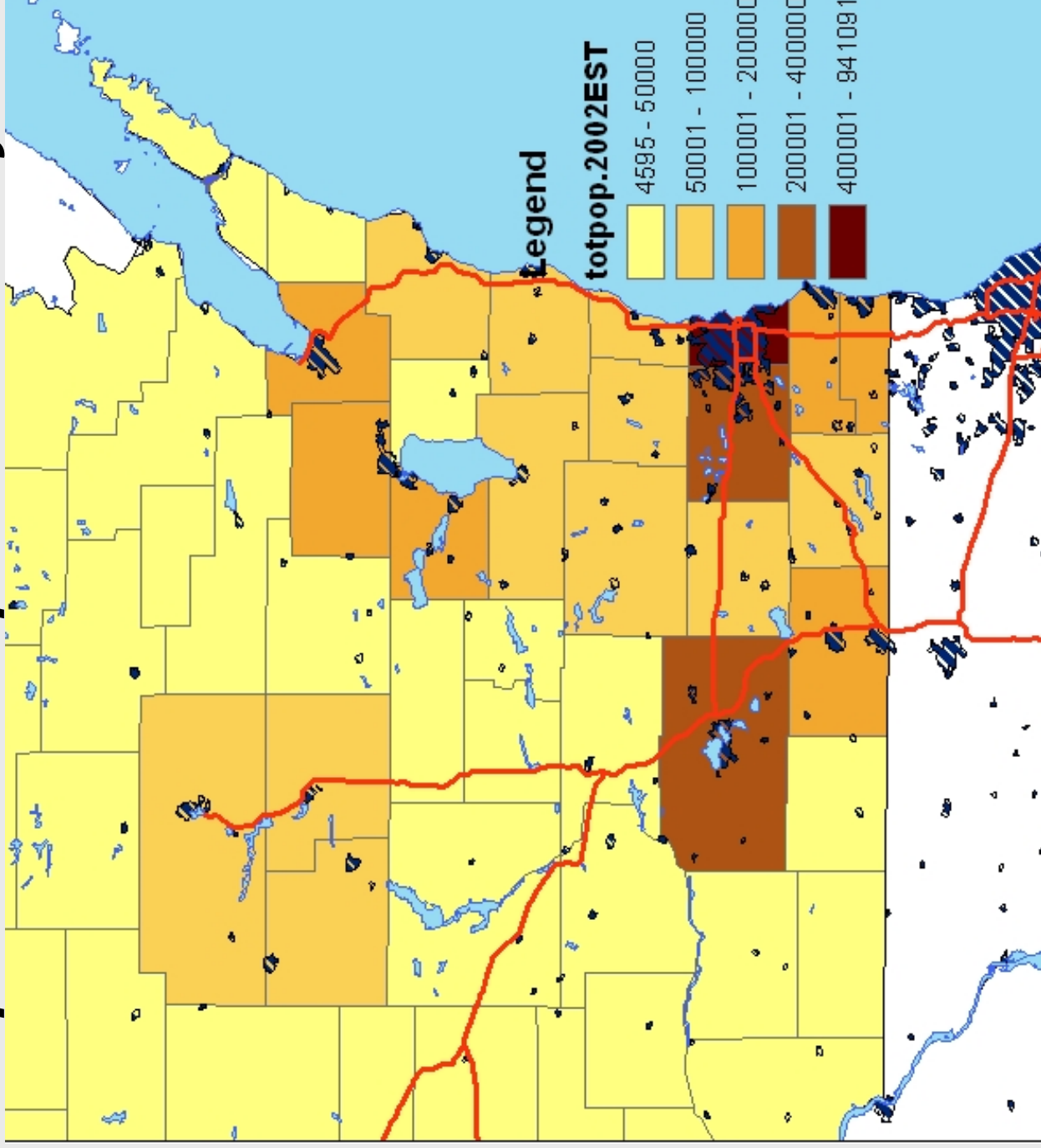
Density Per Square Mile

| |
|--------------|
| Less than 20 |
| 20 - 40 |
| 40 - 80 |
| 80 - 160 |
| 160 or more |

Sources of data: WI Demographic Services Center,
January 2000 Population Estimates; WI Office of
Land Information Services, 1998 Land Area by MCD

Map prepared by WI Demographic Services
Center, October 2000

Total Population Comparison - County Basis

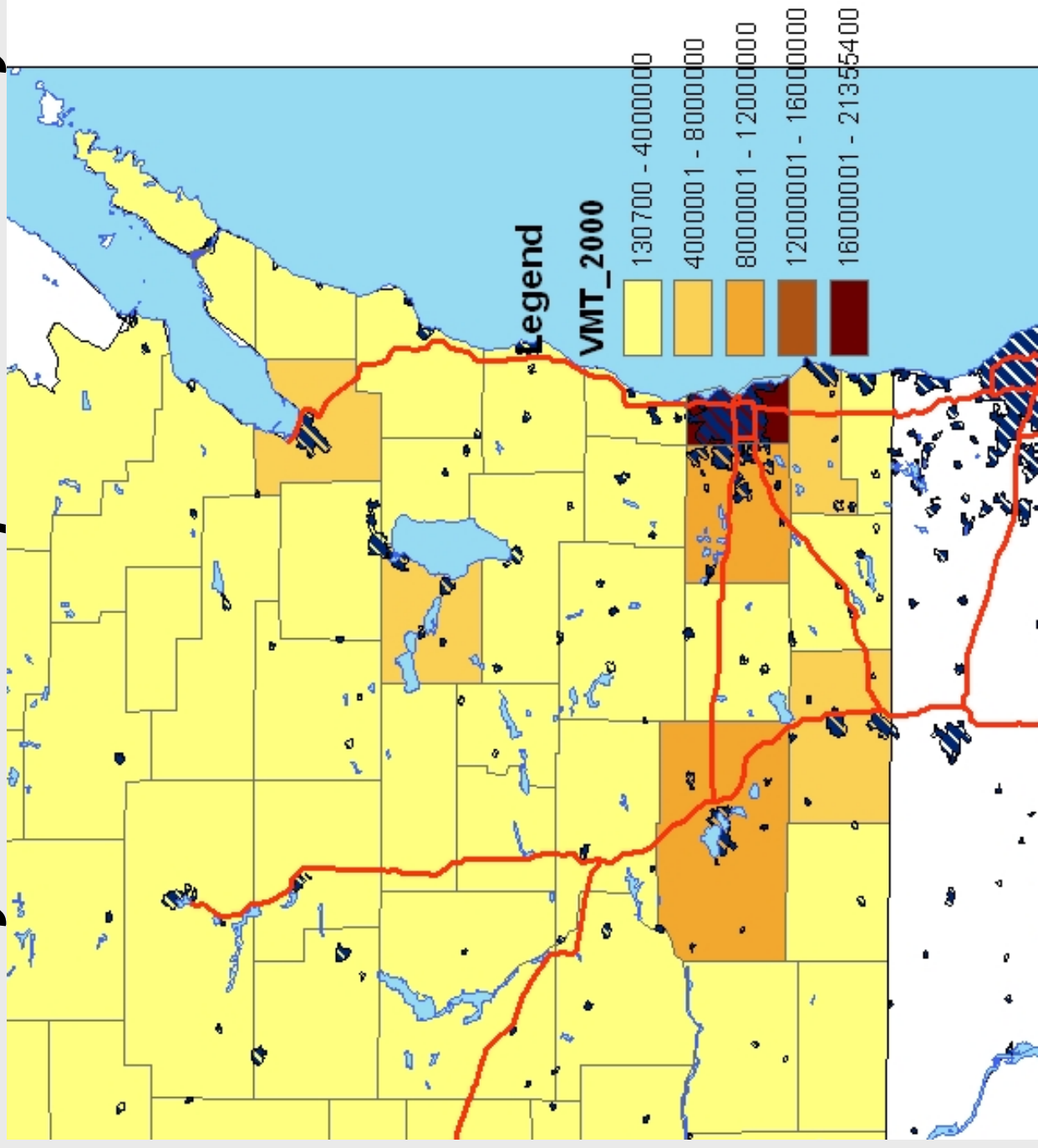


Key Criteria 5 - Total Travel, Travel Growth and Regional Commuting Characteristics with a focus on travel between attaining and violating areas

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The following maps and tables portray relative travel and travel growth by county along with the patterns of cross-commuting for areas with uncertain attainment or violation status based on potential contribution to violating areas. The issue of contribution involves where the workforce lives and travels in a region and is key indicator of metropolitan area definition. Levels approaching 25% commuting indicate a highly mobile workforce where strong economic linkage likely exists between counties. The Census Bureau and OMB use this type data to determine refinements to existing metropolitan area boundaries.

Total Daily Travel Comparison - County Basis



Travel Growth Rate Comparison - County Basis

Key:

1985-2000

Annualized
Daily Travel
Growth Rate

Dark Brown

4-6%



Brown/Orange

3-4%



Orange

2-3%



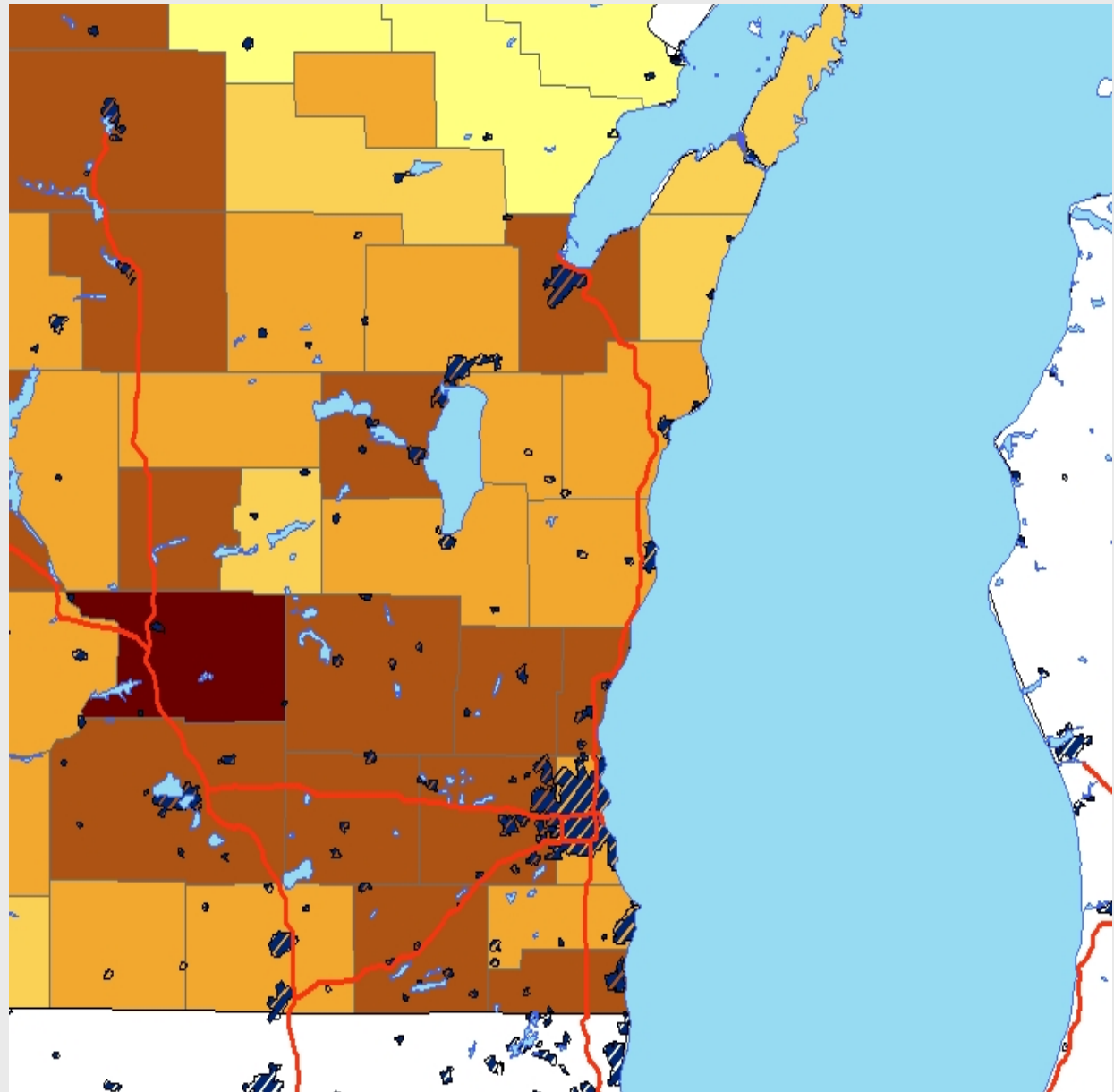
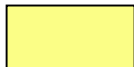
Tan

1-2%



Yellow

<1%



Commuting Patterns

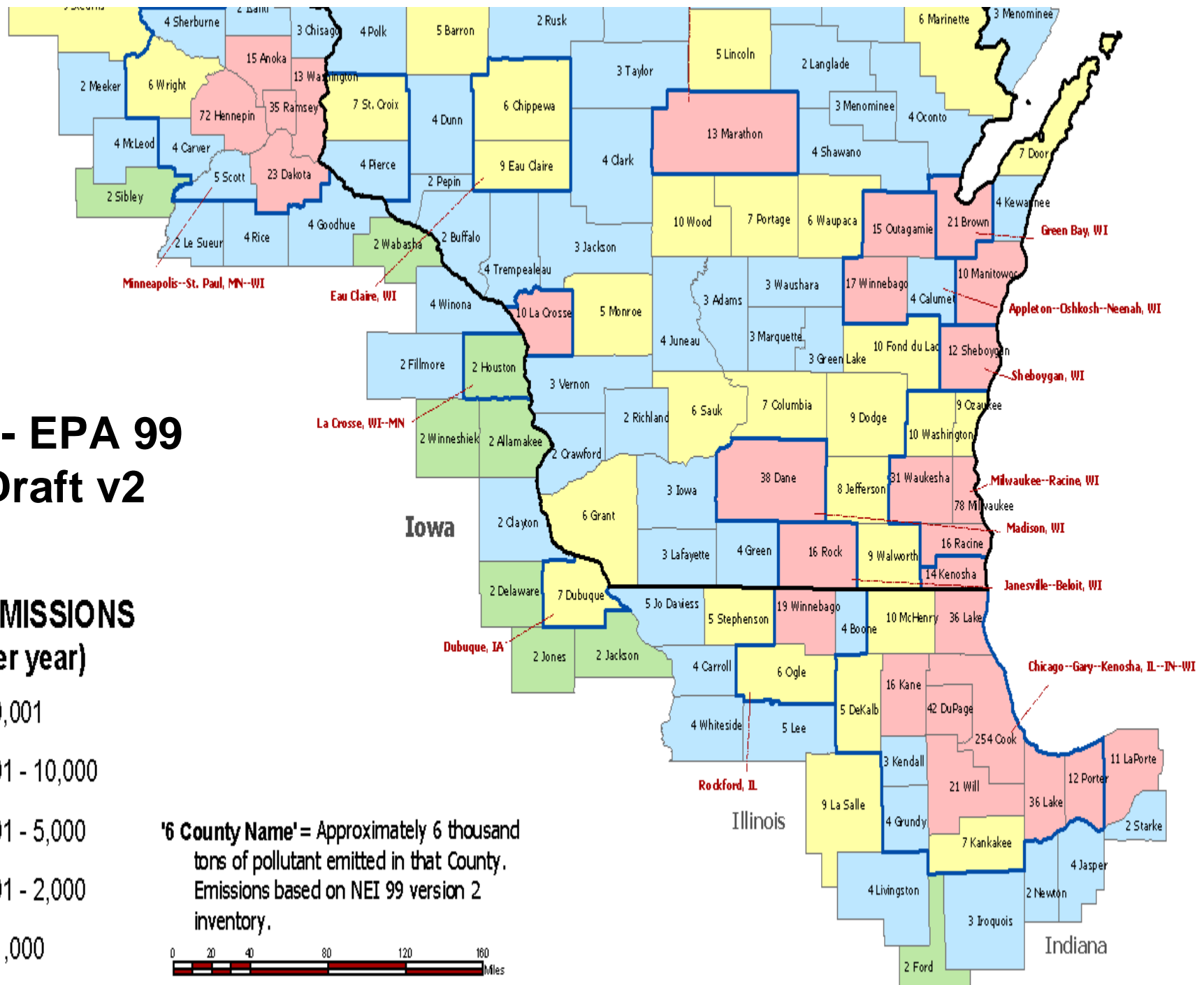
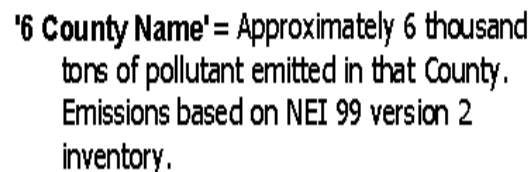
(separate tables or graphic)

Key Criteria 6 - Total Emissions and Relative Emissions Density and Growth/Decline for Areas assessed for Contribution and for areas adjacent and upwind of violating sites

June 17, 2003

The following maps and tables portray NO_x and VOC emissions for the region and for areas in Wisconsin assessed for potential contribution to violating sites.

COUNTY EMISSIONS (tons per year)

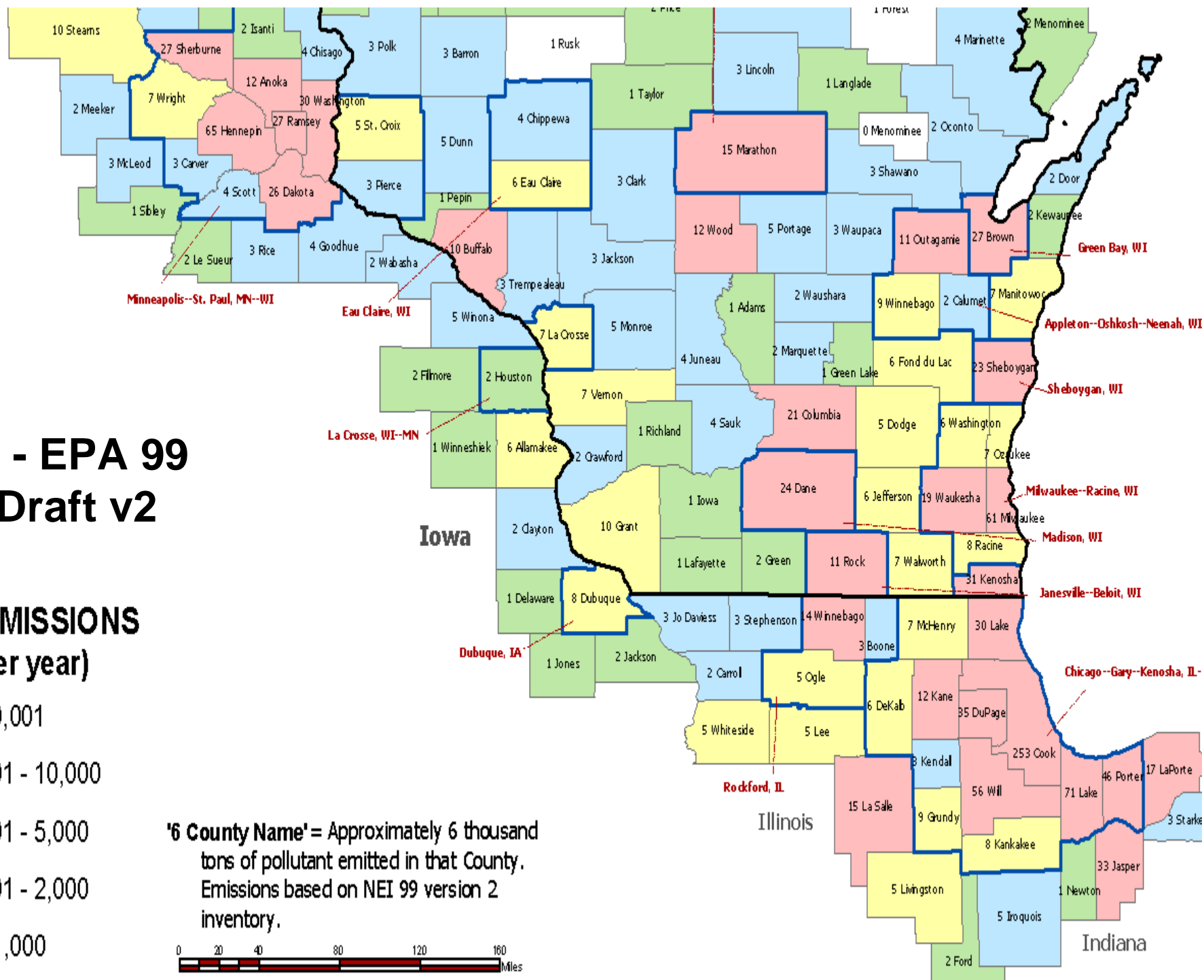


NOx - EPA 99 NEI Draft v2

COUNTY EMISSIONS (tons per year)



'6 County Name' = Approximately 6 thousand tons of pollutant emitted in that County. Emissions based on NEI 99 version 2 inventory.



Emissions Rank by County

| County | VOC Rank | VOC Tons | NOx Rank | NOx Tons | Population Rank & # |
|-----------------------------------|-----------|----------------|-----------|----------------|---------------------|
| Milwaukee (MSA) | 1 | 77,681 | 1 | 60,587 | 1 – 940,000 |
| Waukesha (MSA) | 3 | 31,389 | 7 | 19,229 | 3 – 360,000 |
| Racine (MSA) | 6 | 15,756 | 15 | 8,353 | 5 – 188,000 |
| Ozaukee (MSA) | 18 | 9,147 | 16 | 7,423 | 19 – 82,000 |
| Washington (MSA) | 11 | 9,825 | 21 | 6,298 | 11 – 117,000 |
| Kenosha (MSA) | 9 | 14,036 | 2 | 31,341 | 9 – 150,000 |
| 6 Co SE Wisconsin Subtotal | | 157,851 | | 133,231 | 1,837,000 |
| Sheboygan (MSA) | 11 | 11,797 | 5 | 22,607 | 12 – 113,000 |
| Manitowoc | 13 | 10,066 | 18 | 7,027 | 18 – 83,000 |
| Kewaunee | 46 | 3,698 | 55 | 1,514 | 51 – 20,000 |
| Door | 22 | 7,183 | 51 | 2,065 | 44 – 28,000 |
| 4 Co NE Wisconsin Subtotal | | 32,744 | | 33,213 | 244,000 |
| Dane (MSA) | 2 | 37,739 | 4 | 24,203 | 2 – 427,000 |
| Brown (MSA) | 4 | 20,949 | 3 | 26,631 | 4 – 227,000 |
| Winnebago (MSA) | 5 | 17,045 | 14 | 8,642 | 7 – 157,000 |
| Outagamie (MSA) | 8 | 15,253 | 10 | 11,468 | 6 – 161,000 |
| Rock (MSA) | 7 | 15,508 | 11 | 10,541 | 8 – 152,000 |
| Calumet (MSA) | 51 | 4,265 | 47 | 2,317 | 35 – 41,000 |
| Fond du Lac | 15 | 9,761 | 22 | 5,677 | 14 – 97,000 |
| Columbia (Madison ?) | 23 | 7,053 | 6 | 21,397 | 26 – 52,000 |
| Jefferson (Milw ?) | 21 | 7,848 | 24 | 5,587 | 21 – 74,000 |
| Dodge (Milw ?) | 20 | 8,700 | 25 | 5,096 | 17 – 86,000 |
| Walworth (Milw/IL ?) | 17 | 9,284 | 20 | 6,503 | 15 – 94,000 |
| 11 Co Collar Area Subtotal | | 153,405 | | 128,062 | 1,568,000 |

Key Criteria 7 - Assessing a relative ozone AQ impact for potential nearby contributing areas upwind of violating sites in Wisconsin

June 17, 2003

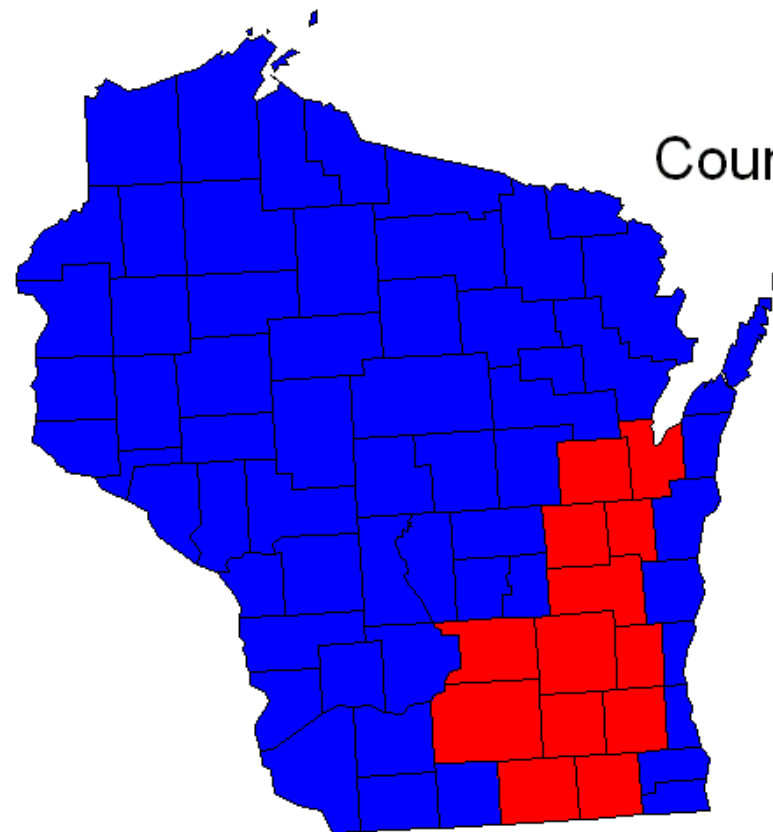
The following maps portray the impact of NO_x plus VOC emissions, NO_x emissions alone and aggregate Mobile Sector emissions for the areas in Wisconsin assessed for potential contribution to violating sites. The counties included in the assessment include the area of south central and east central and north east Wisconsin presumed through population and emissions assessments to have a potential to impact the violation status of other counties in the state - both with elevated but attainment readings and those with violating readings. The assessment formed a basis for an earlier air program recommendation to designate a larger area based on a full assessment of contribution and the impact of the base emissions from the contributing areas on the monitored violation status for downwind areas. The assessment of this episode led to such a contribution conclusion for areas in northeastern, south central and east central Wisconsin.

2001 - June Episode

Fringe Area Impact “Contribution” Assessment

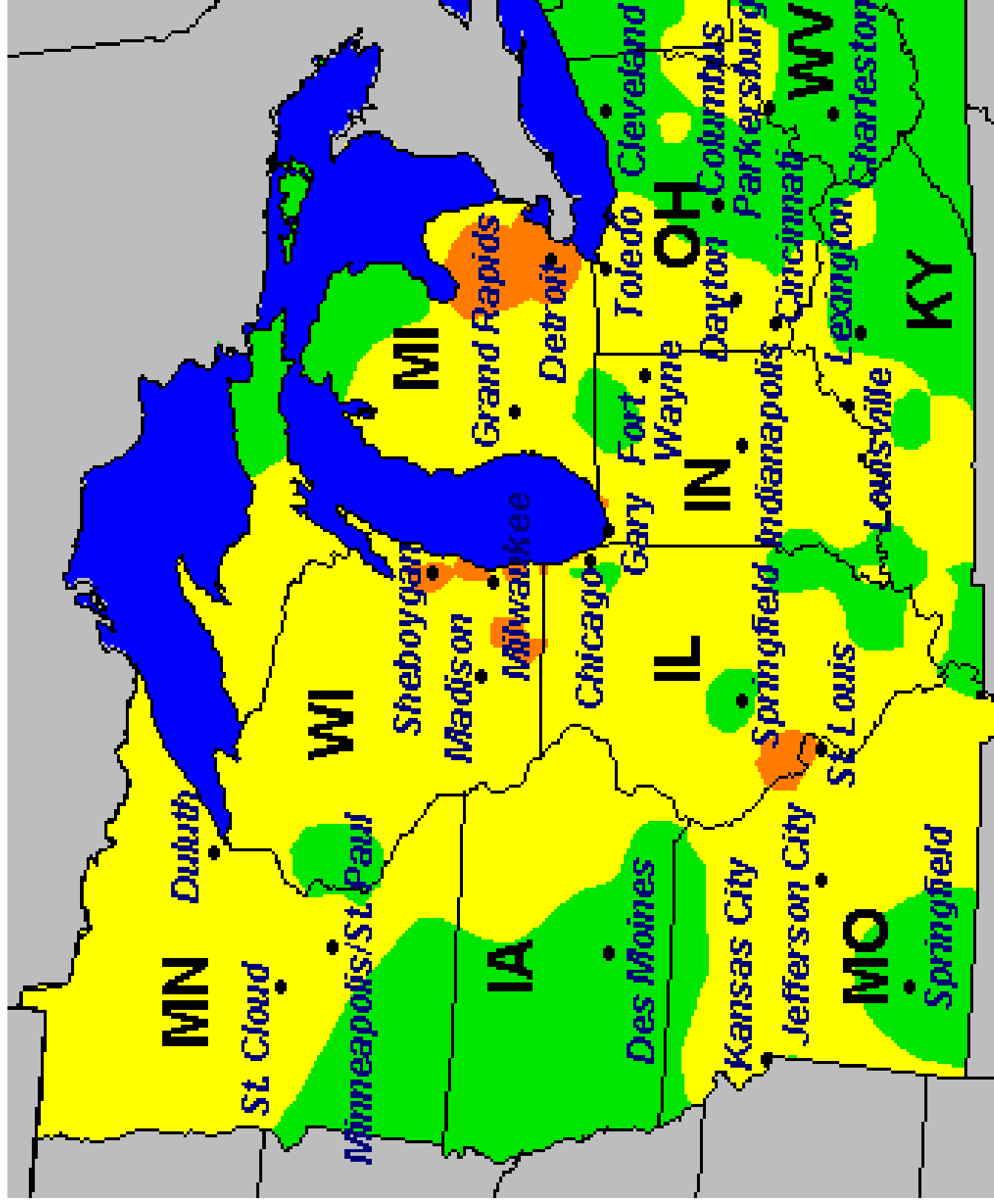
Wisconsin Collar Counties NAAQS 8-hour Ozone Standard Analysis

Modeled Impacts of Zero-Out emission reductions (NO_x and VOC) from the non-Lake Shore Counties ranging from Rock County through Brown County through Brown County and including the Dane Co and Fox Valley regions compared to AIRNOW 8-Hour Maps



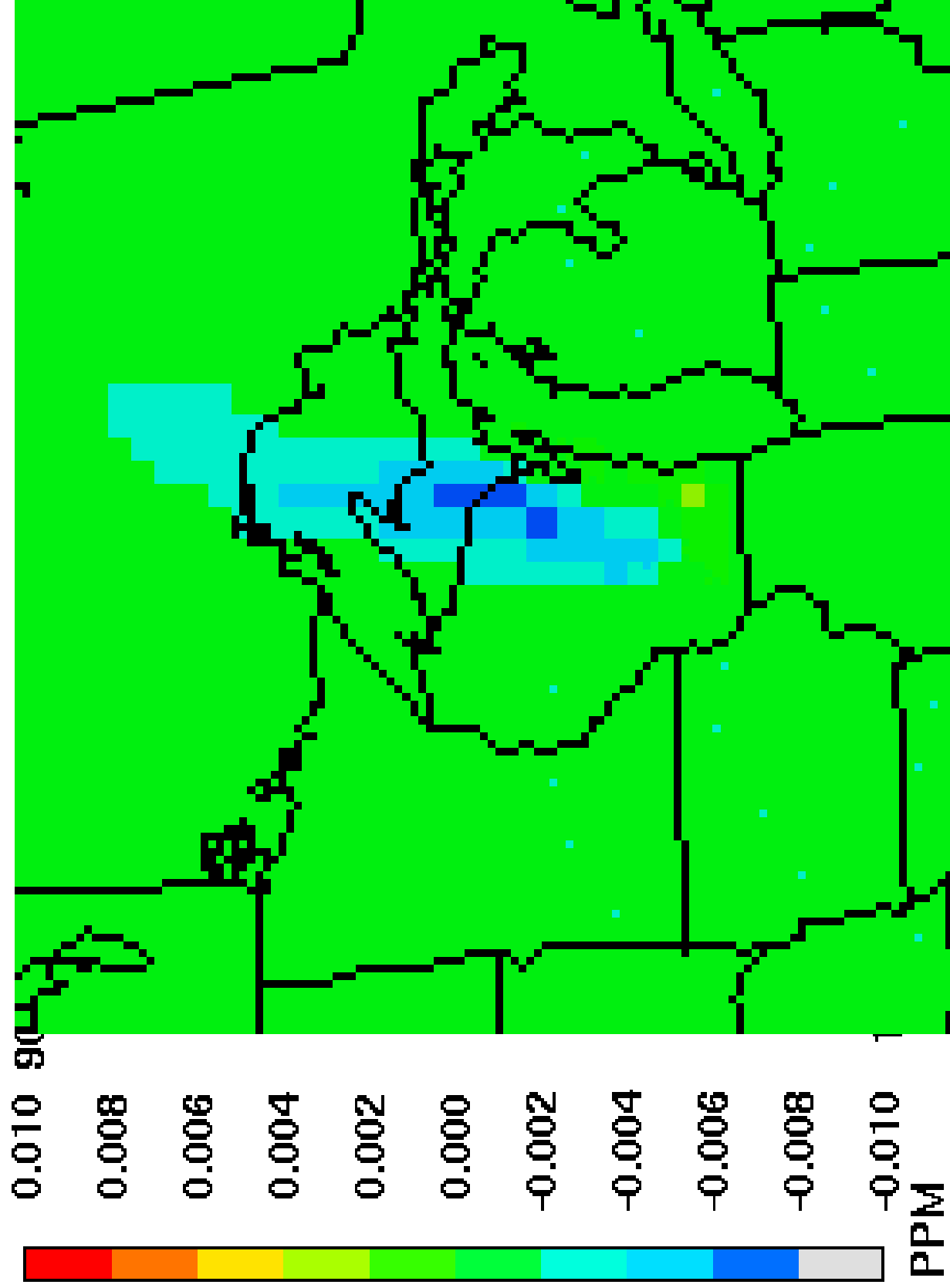
Counties Include:

Brown
Calumet
Columbia
Dane
Dodge
Fond du Lac
Jefferson
Outagamie
Rock
Walworth
Washington
Waukesha
Winnebago



June 25, 2001

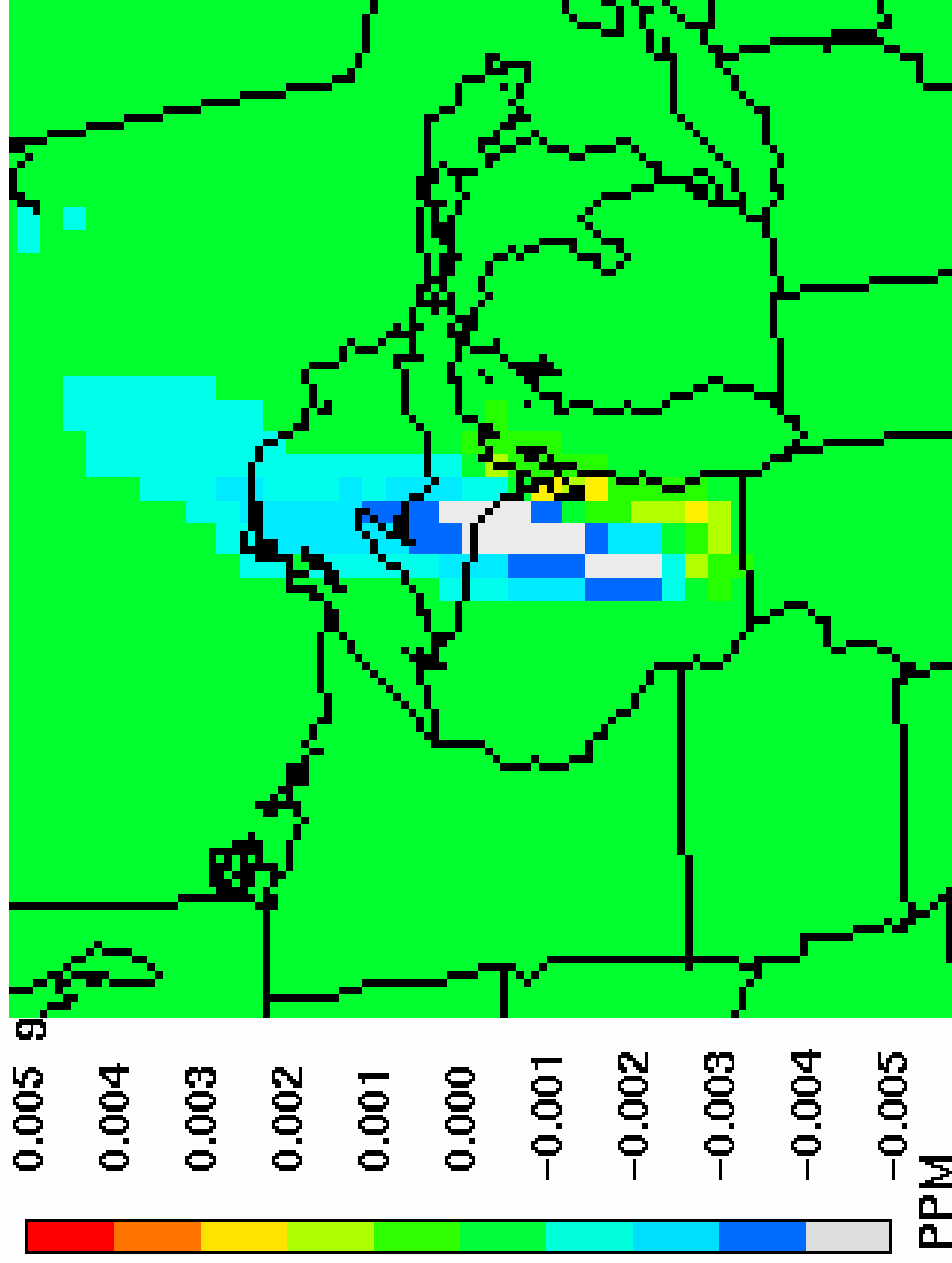
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June 25, 2001 0:00:00

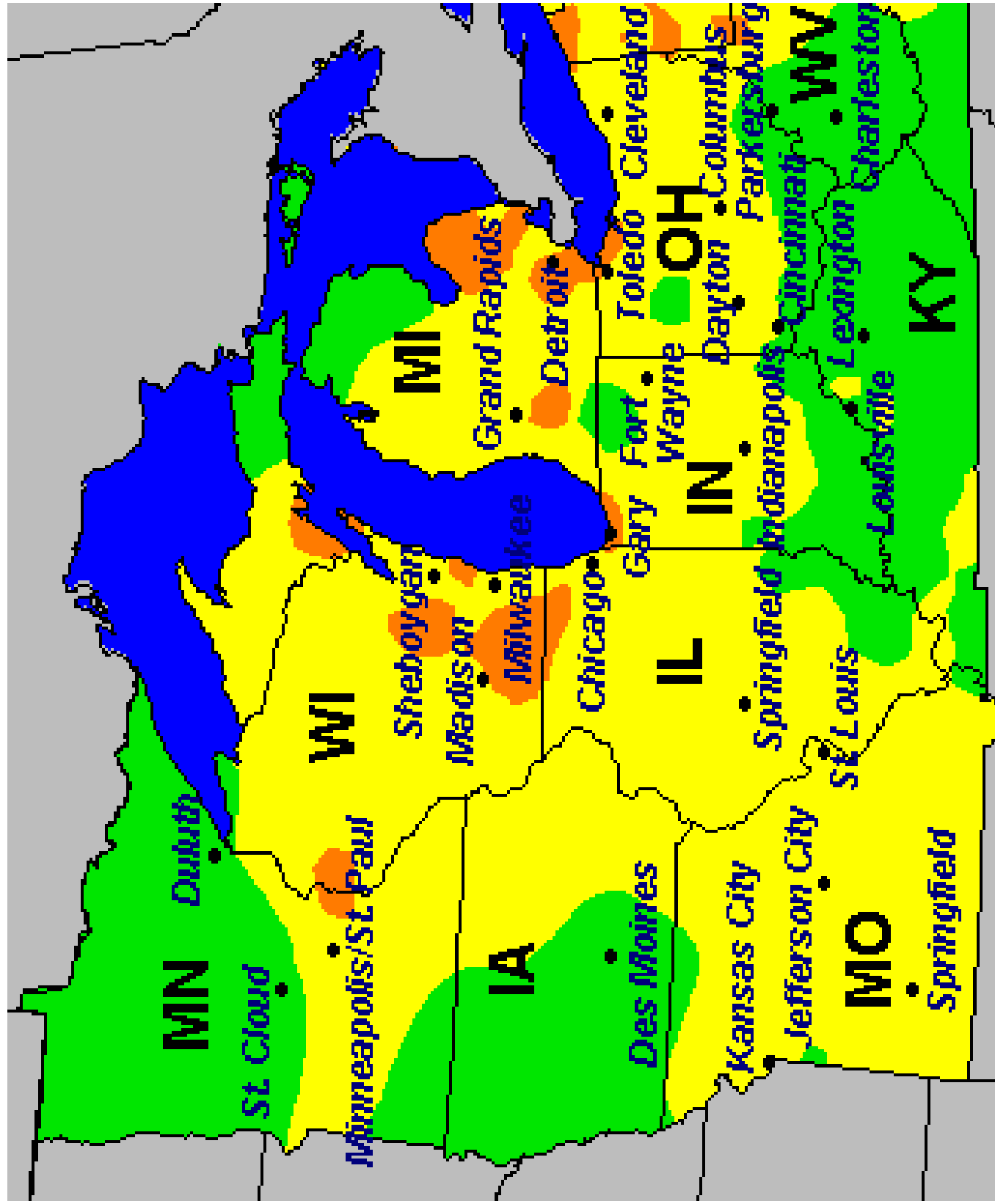
Min= -0.007 at (45,63), Max= 0.003 at (45,56)

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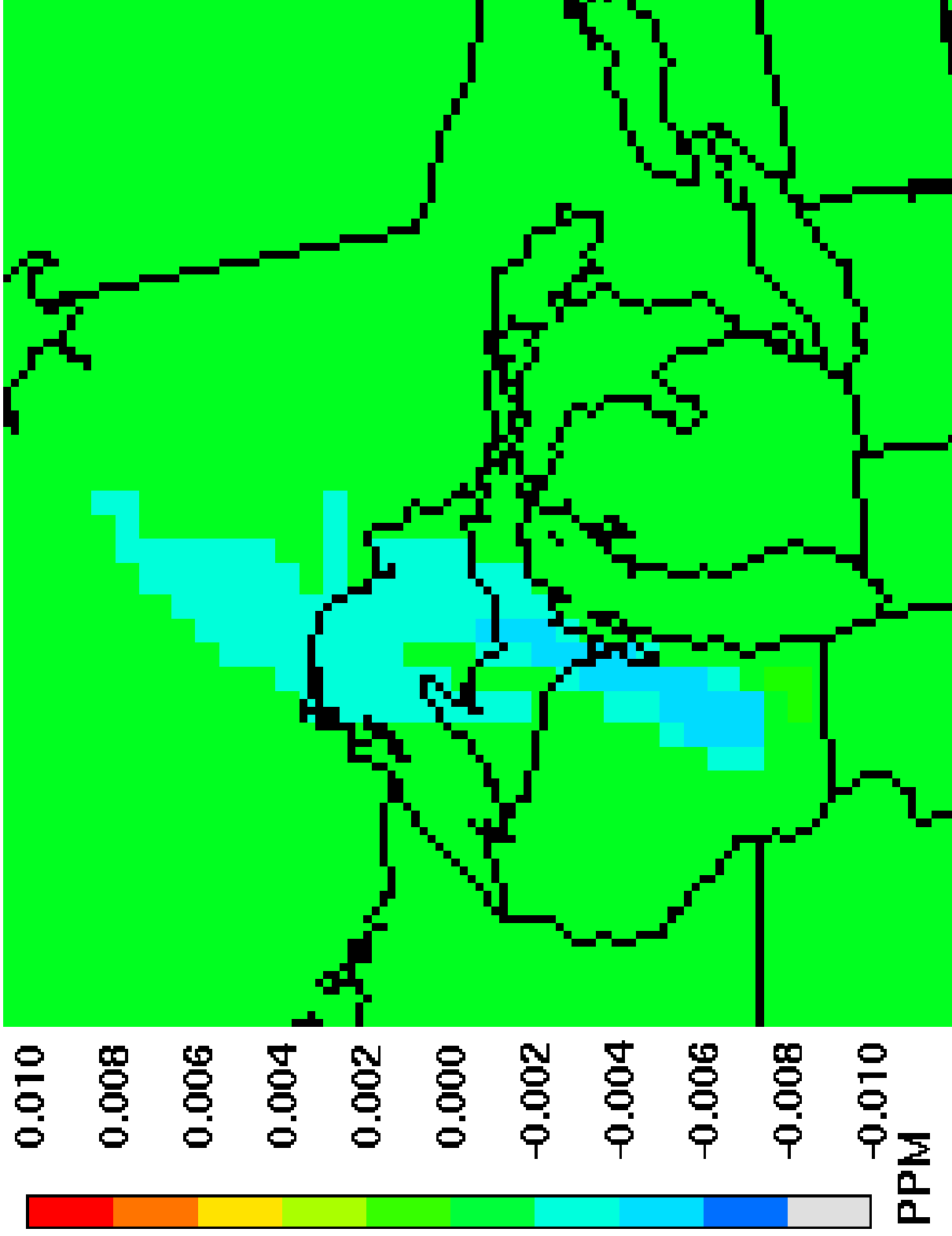
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Min= -0.005 at (43,59), Max= 0.003 at (45,56)



June 26, 2001

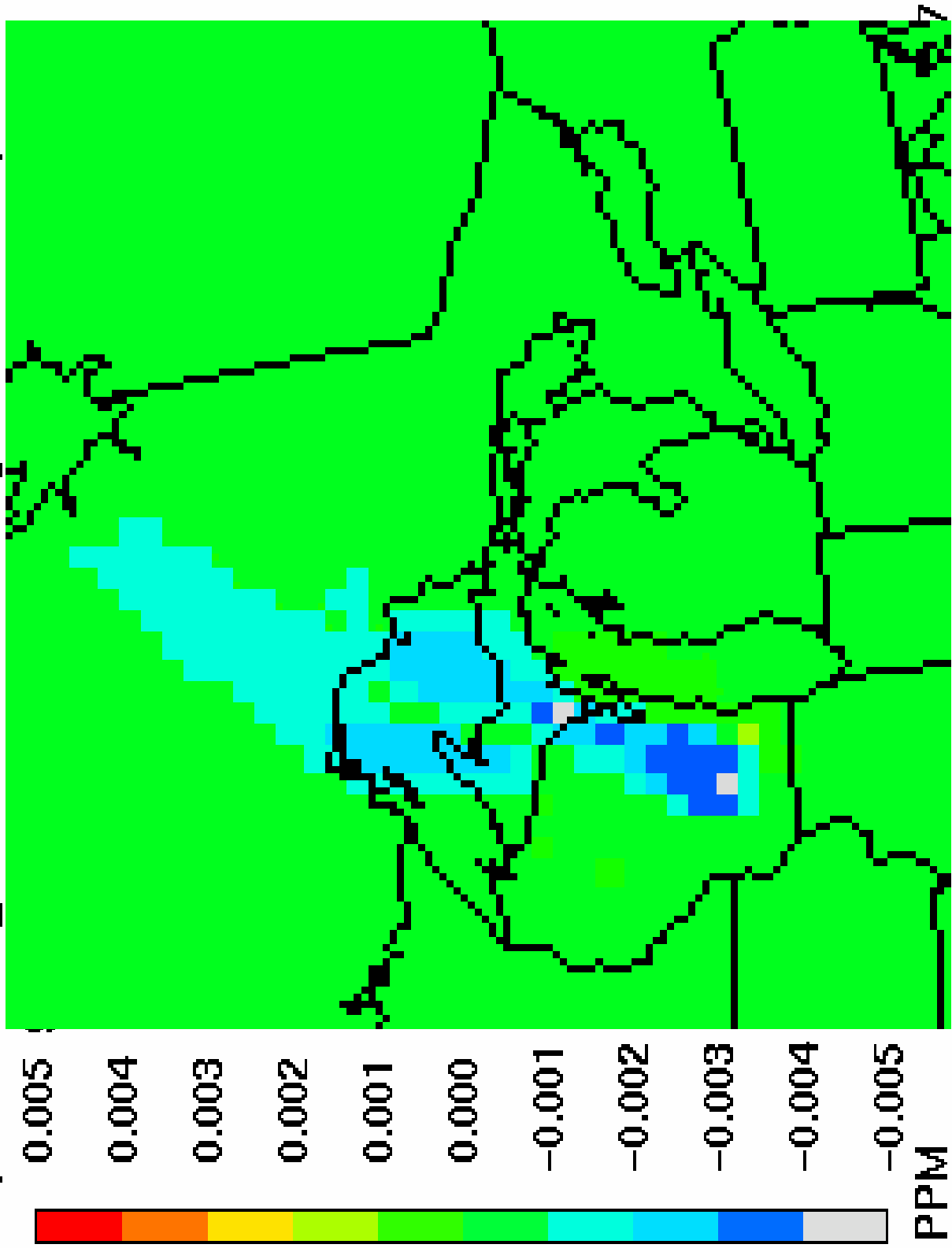
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June 26, 2001 0:00:00

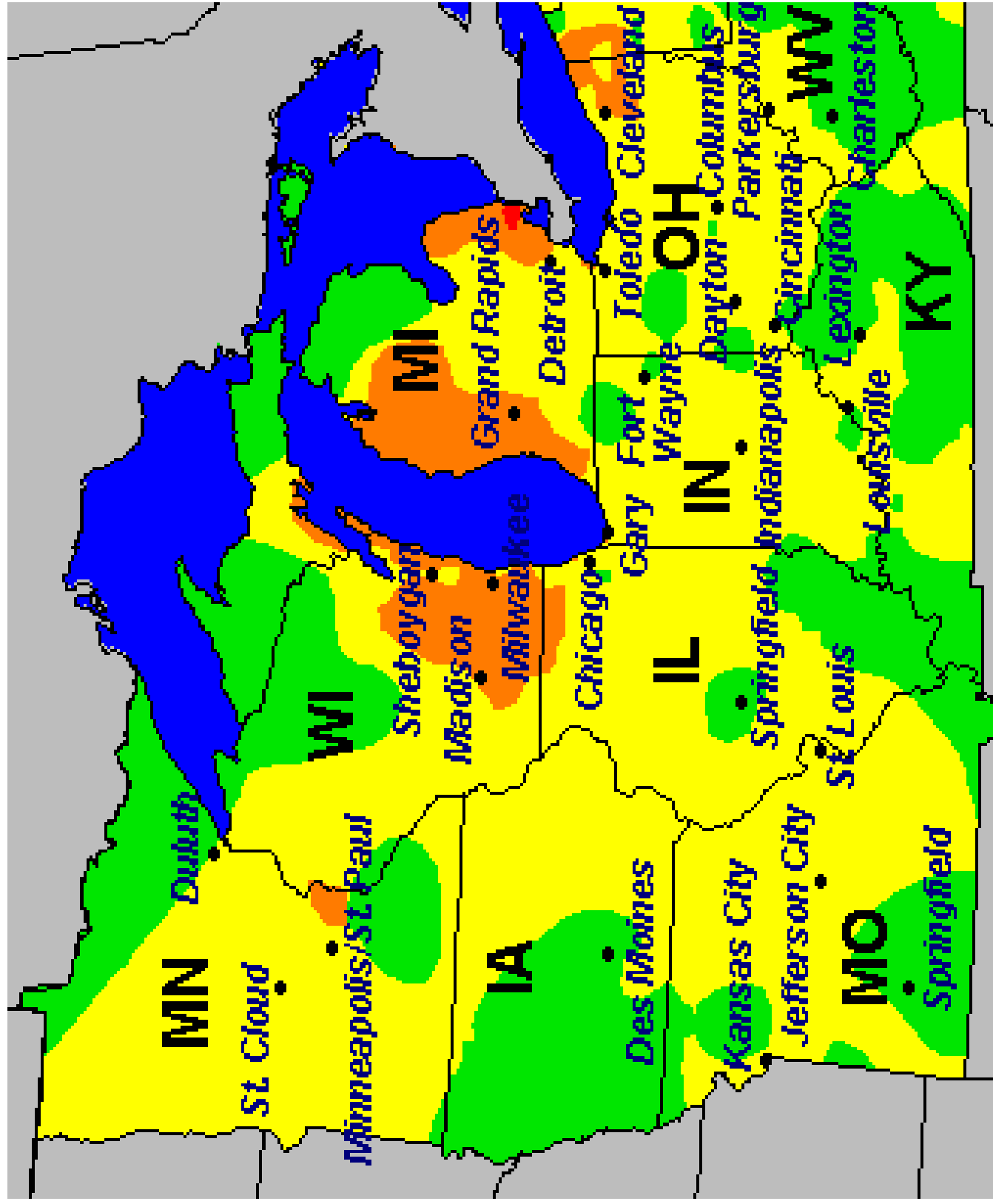
Min= -0.006 at (46,64), Max= 0.001 at (45,56)

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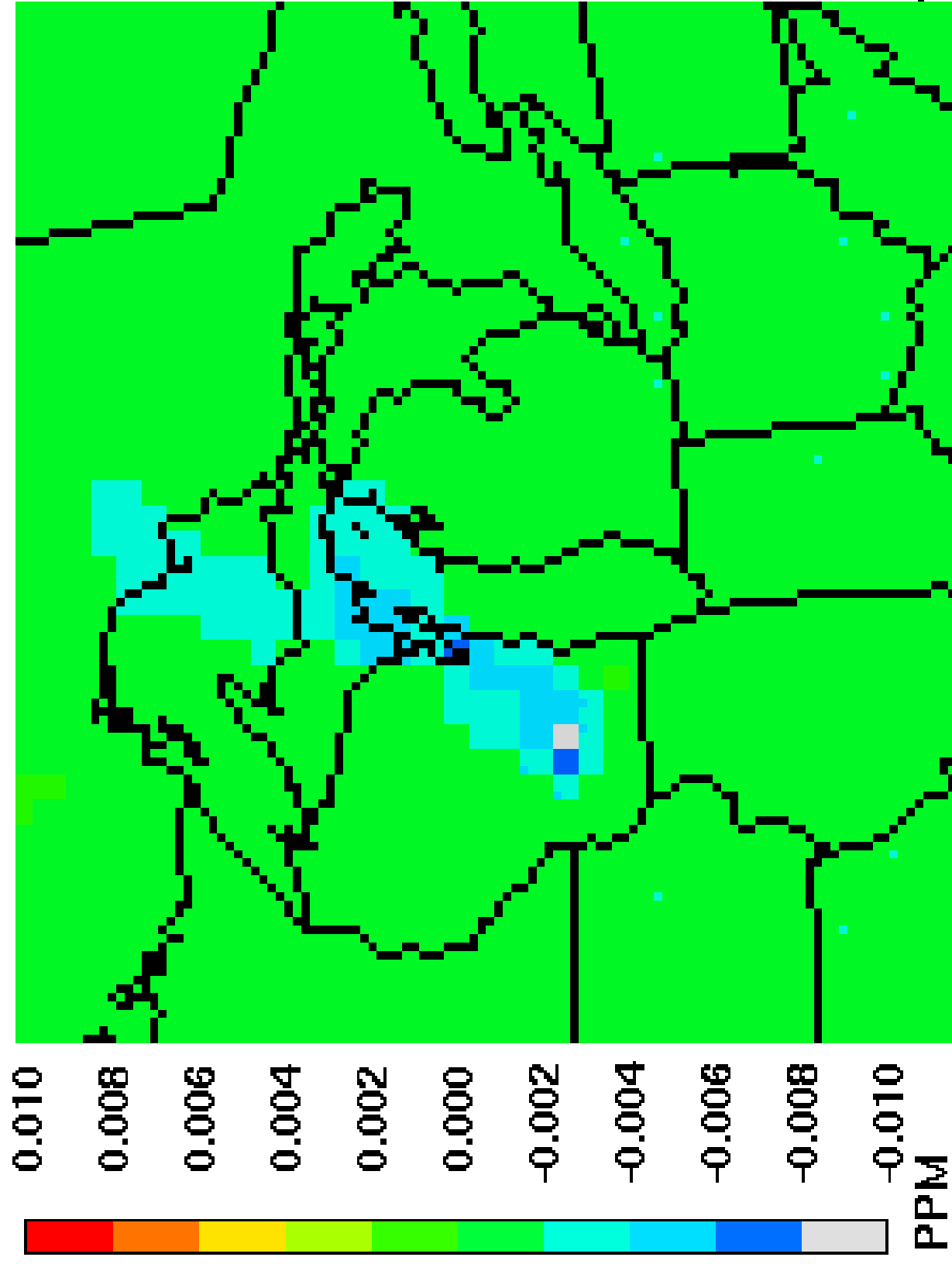
June 26, 2001 0:00:00

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June 27, 2001

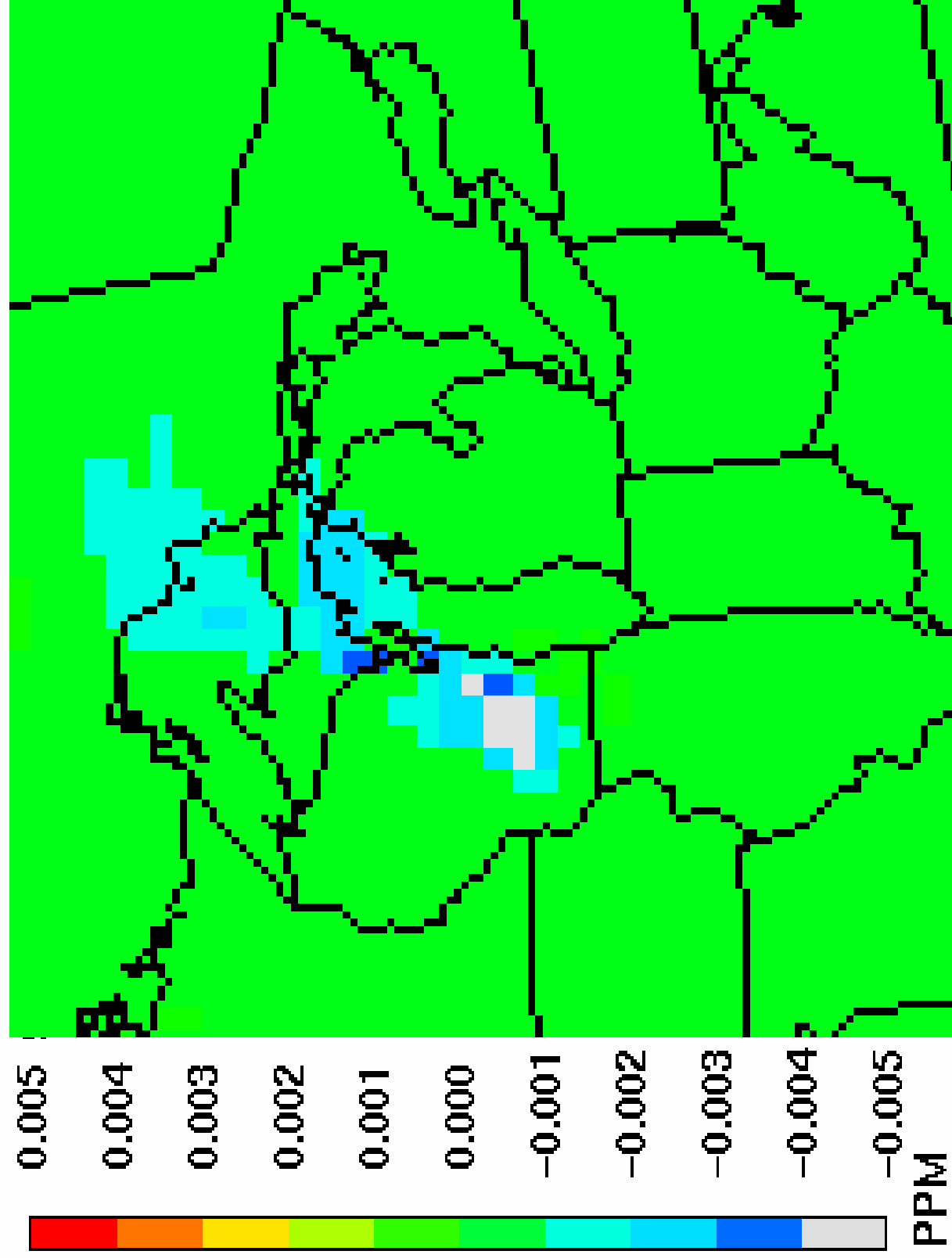
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June 27, 2001 0:00:00

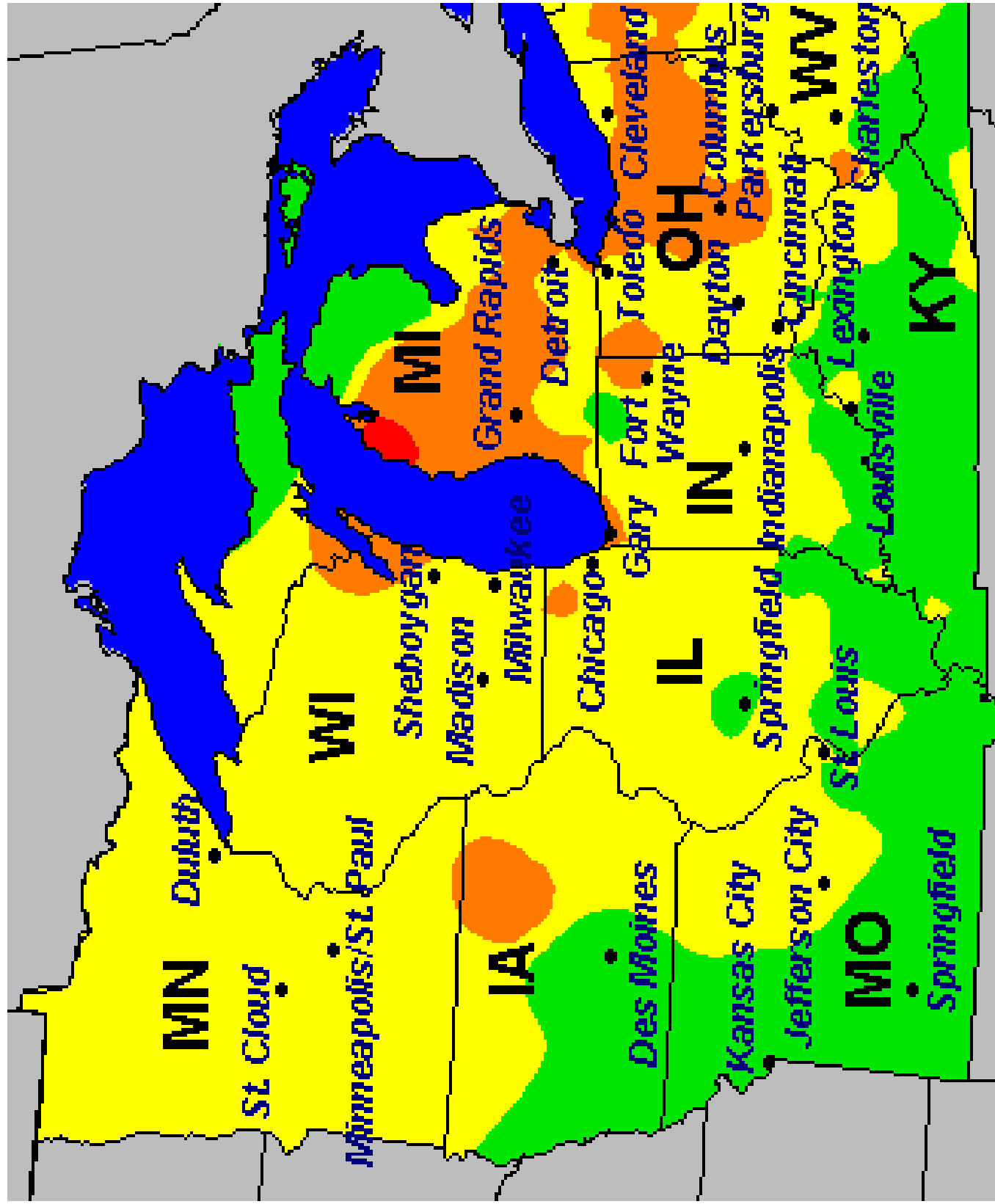
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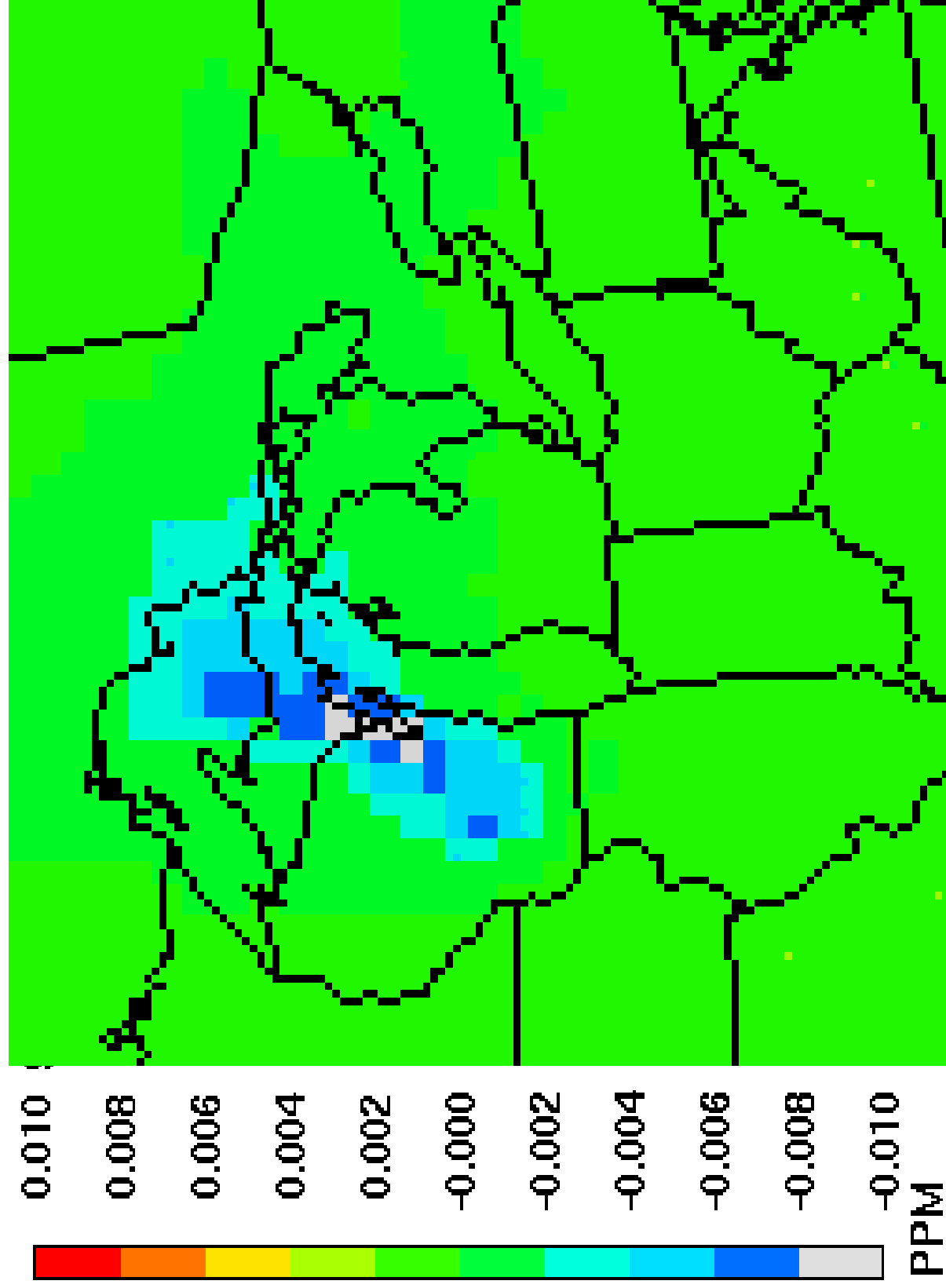
June 27, 2001 0:00:00

Min= -0.008 at (43,57), Max= 0.001 at (45,55)

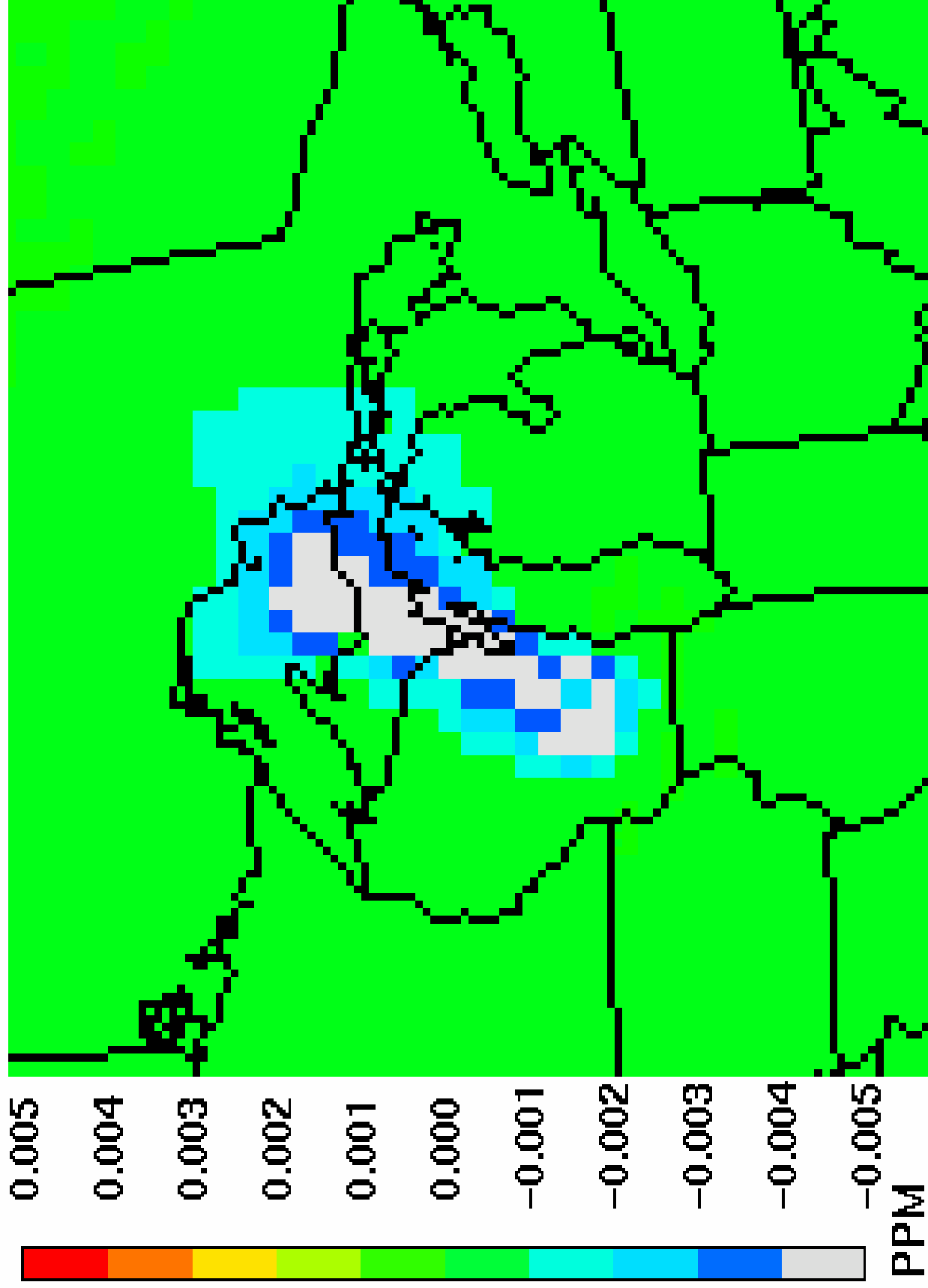


June 28, 2001

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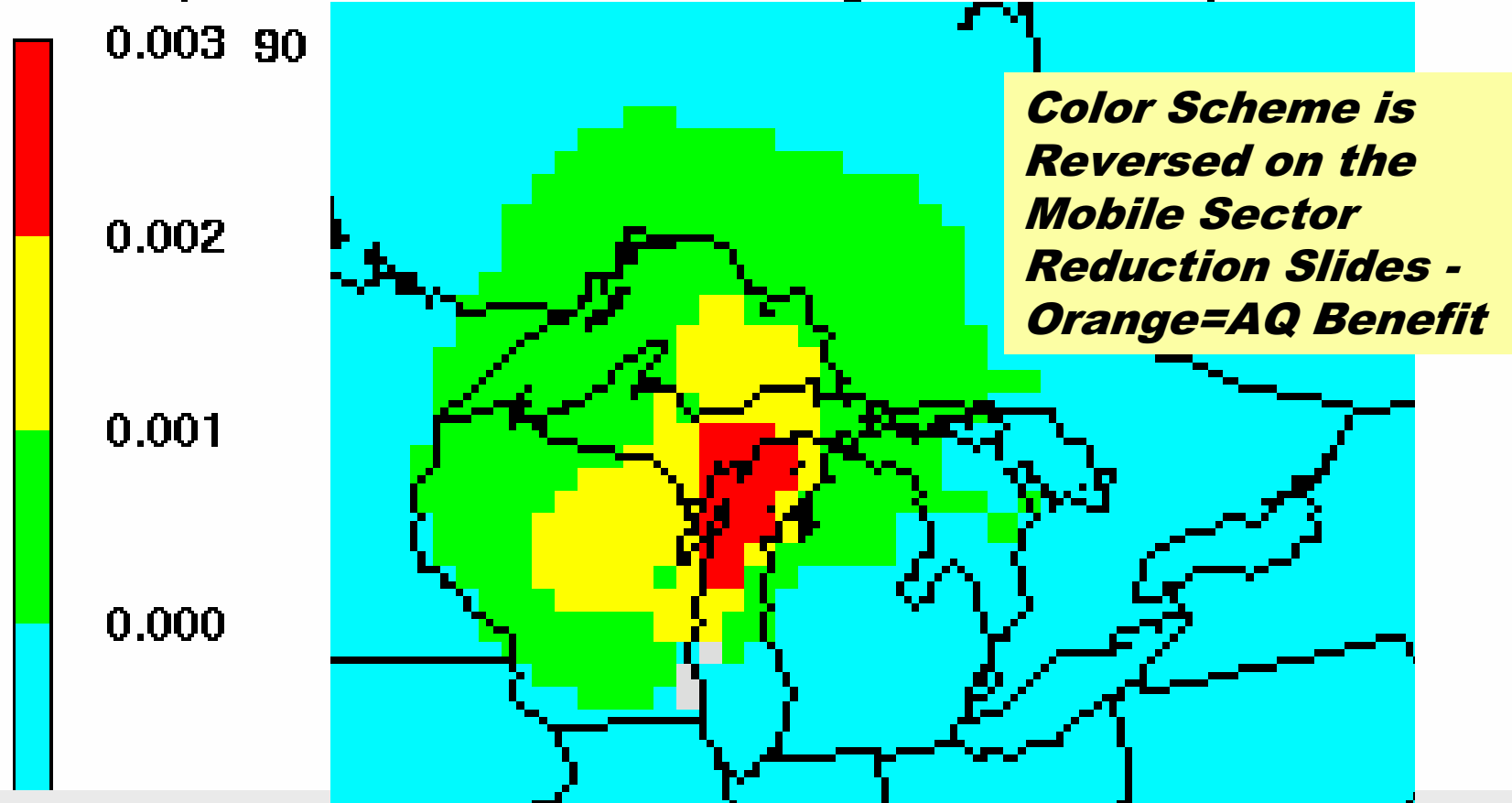
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June 28, 2001 0:00:00

Min= -0.007 at (46,61), Max= 0.001 at (47,57)

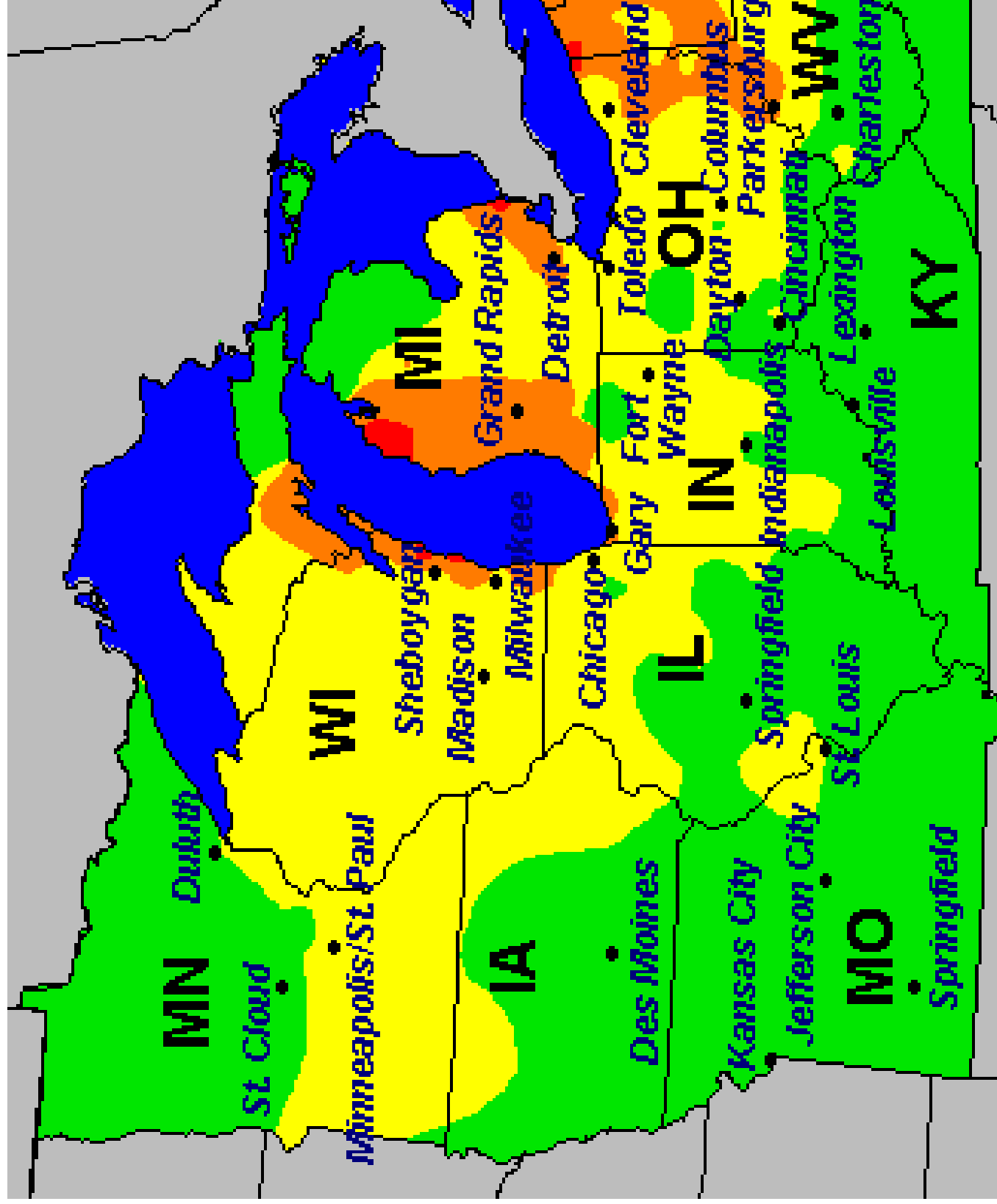
1179.4rpos.36.14.baseD.ld.camx.avrg, h=2001179.4rpos.36.14.wi40.



...and visualizing pollutant emissions impacts....here from mobile sector reductions of 40%

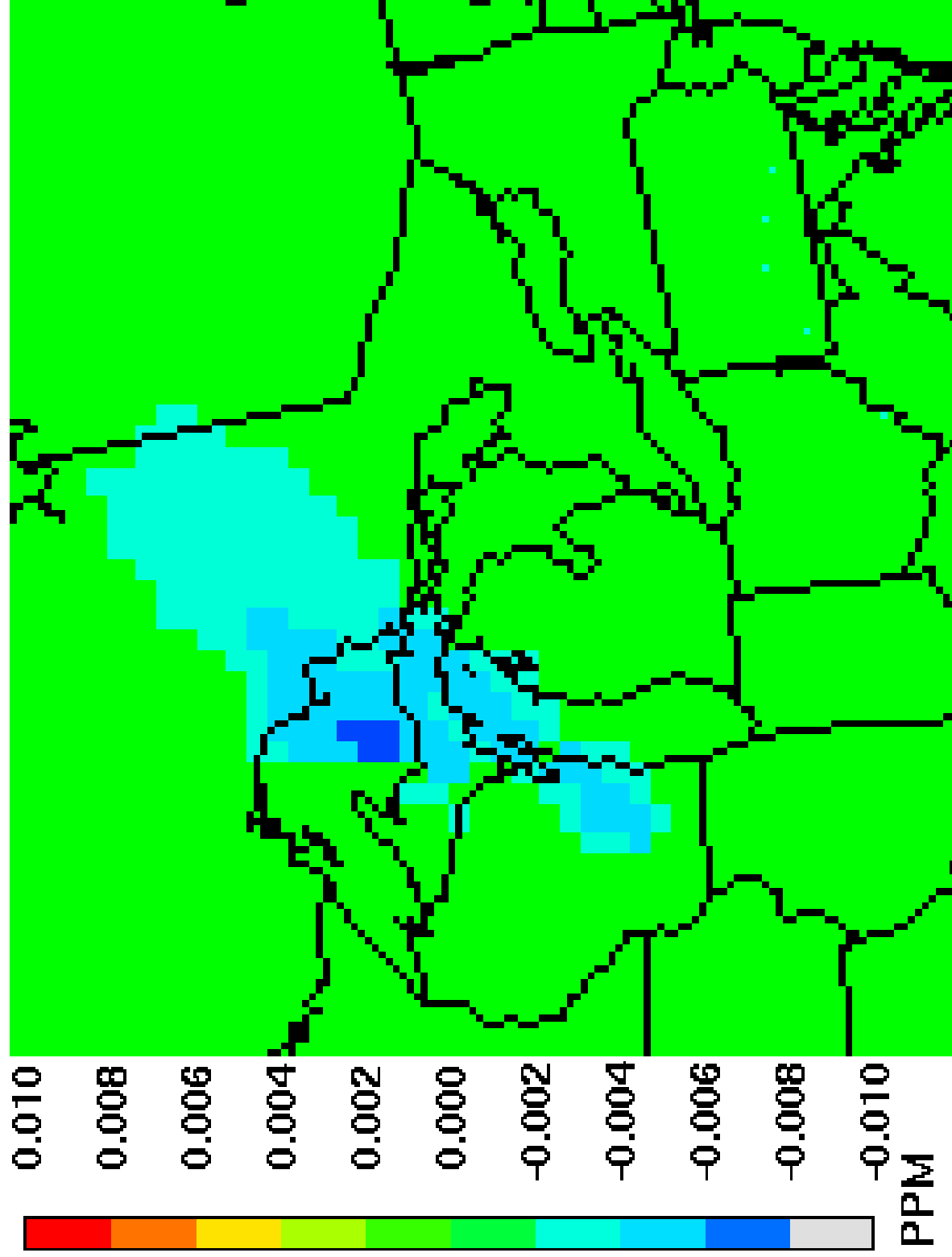
June 28,2001 0:00:00

Min= -0.002 at (46,56), Max= 0.003 at (48,63)



June 29, 2001

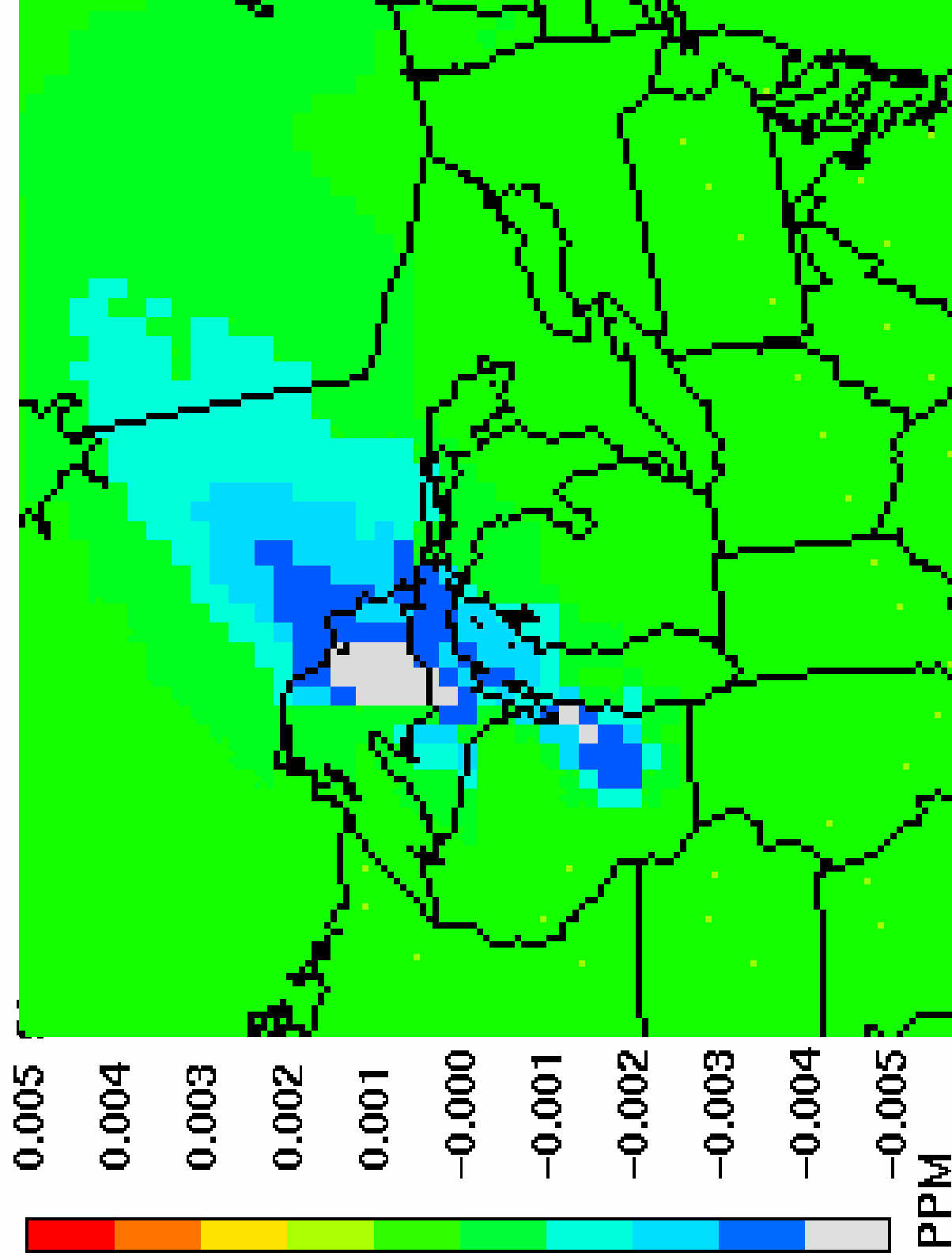
i=2001180.4rpos.36.14.W1_zeroALL.ld.camx.avg, j=2001180.4rpos.36.14.baseD.ld.camx.a



June 29, 2001 0:00:00

Min= -0.007 at (48,69), Max= 0.000 at (44,62)

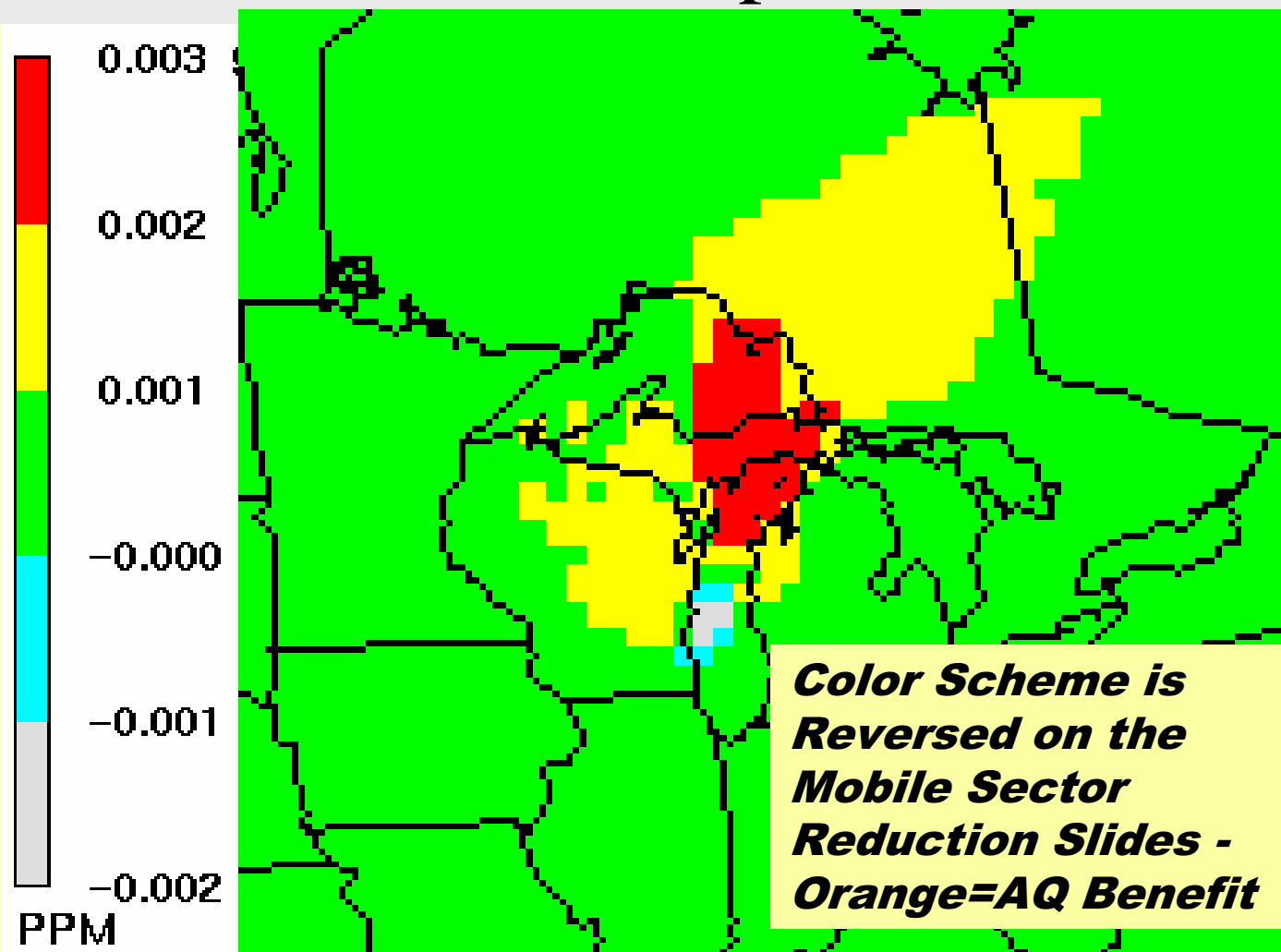
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June 29, 2001 0:00:00

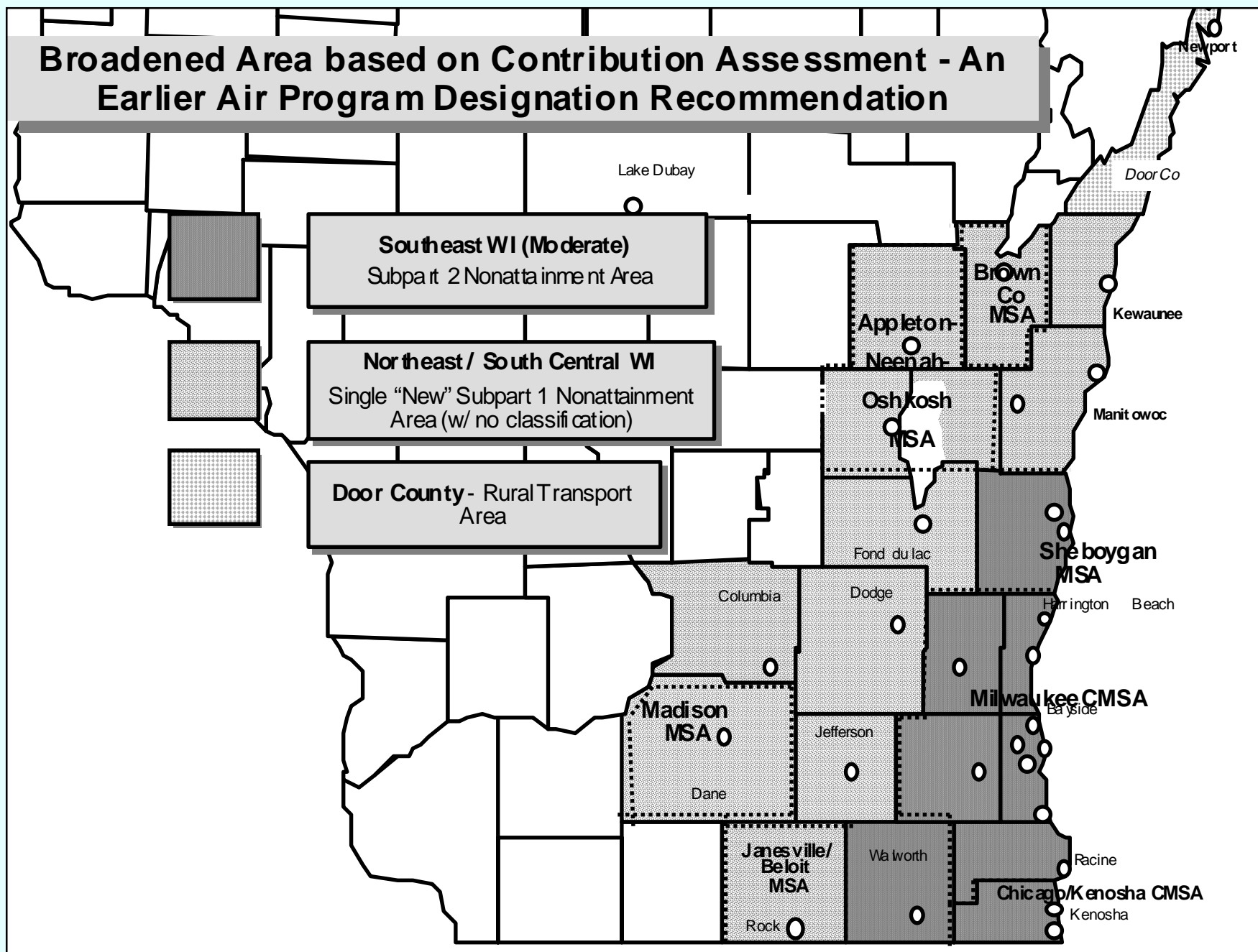
Min= -0.005 at (48,69), Max= 0.001 at (48,59)

Example - WI Vehicle Pollutant Emissions Footprint



June 29, 2001 0:00:00
Min= -0.002 at (47,58), Max= 0.003 at (48,63)

Broadened Area based on Contribution Assessment - An Earlier Air Program Designation Recommendation



Key Criteria 8 - Assessing a relative expected ozone AQ impact for Regional Controls adopted at the national or regional level

June 17, 2003

One of EPA's 11 criteria addresses the expected impact of the regional and national control programs that have already been adopted. *This criteria can not be used to prevent a violating area from being designated as nonattainment.* The criteria does play a role in determining if contribution from identified source areas is likely to continue through the attainment date or if the impact of the regional/national controls is expected to provide for a projected attainment of the key sites by the attainment dates.

Projected Regional Control Program Impact (like the NOx SIPs)

- **NOx SIPs as approved at this time do not provide for attainment level air quality in some northeastern and southeastern Wisconsin counties by the expected attainment dates**
- **The modeling is based on the most recent Clear Skies proposal assessments for “Base” air quality in 2010 which includes the benefit of currently adopted and formally proposed programs including the on-road and non-road sectors**
- **The LADCO modeling of the 2007 1-hour attainment SIP does not show 8-hour attainment level air quality at the key monitors in NE WI by 2007**
- **The NOx SIP does not yet apply to Wisconsin and no formal proposal has been made for Wisconsin which provides for a statewide (or sub-state) NOx control program for large facilities**

*Clarifying Potential Impacts of
Nonattainment Status*

and

Clarifying Questions

What nonattainment DOES NOT mean!

- ***A mandated enhanced I/M program beyond the current SE 7-county program area***
- ***A mandated reformulated gasoline program beyond the current SE 6-county area***
- ***Federally-specified CTG RACT controls for existing large sources***
- ***Mandated New Source Threshold of 25 Tons beyond the current SE 6-county area***
- ***Control programs that would not meet a test of reasonability and availability***
- ➡ ***Most media coverage and several stakeholder groups are significantly misrepresenting the automatic / expected impact of “nonattainment” status.***

What does nonattainment really mean for areas?

- **Transportation Conformity**
- **New Source Review at Higher Thresholds but still including Offsets (*LAER instead of BACT*)**
- **New areas become part of a larger Control Planning Region**
- **Areas may become subject to Cost-Effective Control Measures based on “Reasonable Availability” if these are shown to speed attainment or are necessary to craft attainment strategy**
- **We expect EPA to retain as much flexibility as possible under Subpart 1 for new areas**
- **“Progress” hurdles focus on reaching attainment emissions levels by attainment date - not automatic % reduction (no new 15% except in SE area)**

Comparison of Program Requirements

Southeast WI Area*

- Transportation Conformity
- New Source Review (NSR) - 100 Ton Threshold*
- NOx RACT (or equivalent)
- Review of existing VOC RACT & Paint/Solvent Rules
- Reasonably Available Control Measures (RACM)
- Demonstrate Attainment by 2010 w/ Progress by 2008
 - * *includes at least 6 Counties plus Sheboygan*
 - * *existing 1-Hour Measures in the 6 SE counties until attain*
 - * *We expect no "gotcha" in any new counties that might be added to SE area*

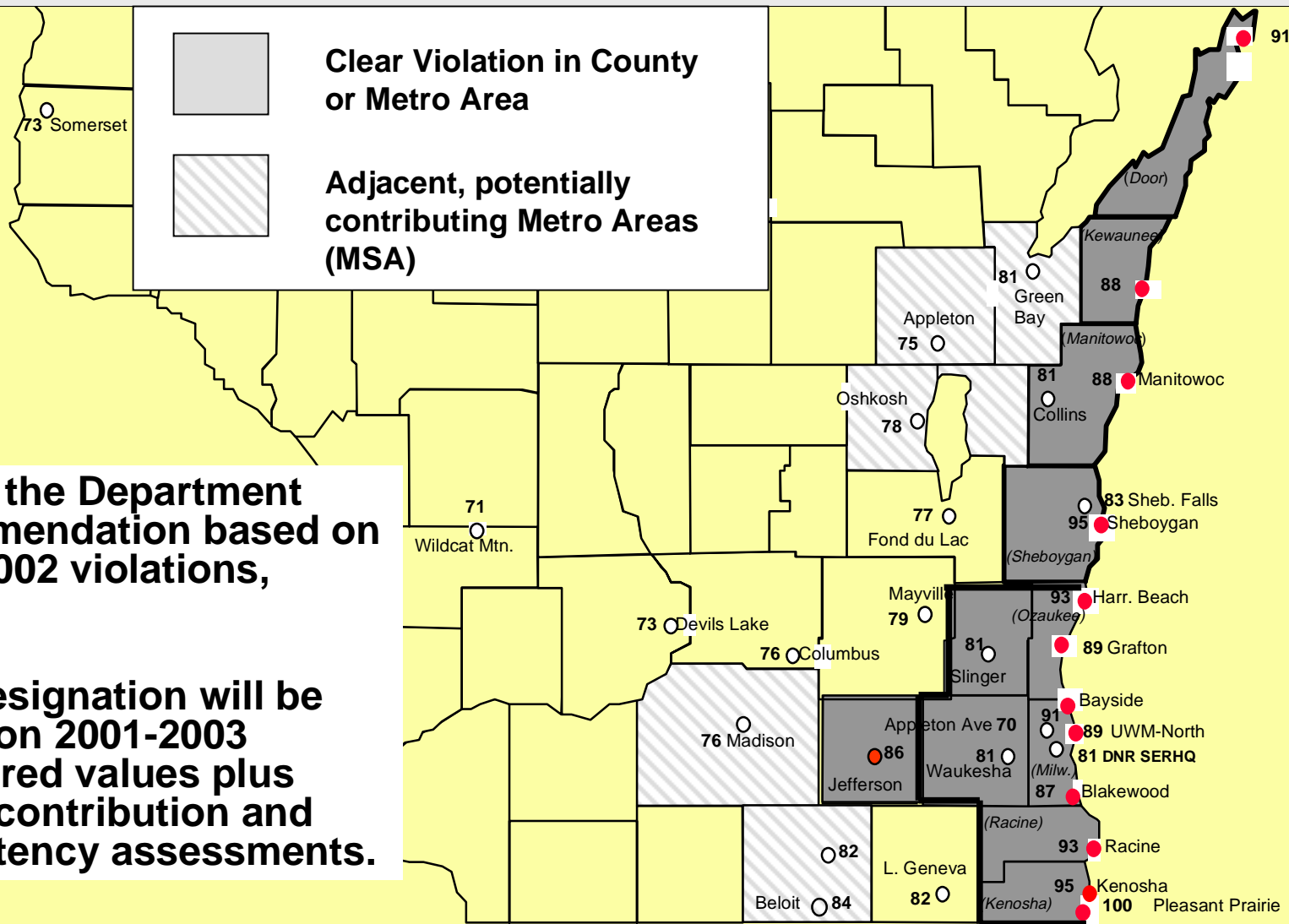
"New" Area

- Transportation Conformity
- NSR - 100 Ton Threshold
- *Evaluate* for NOx and VOC RACT
- *Evaluate* for Reasonably Available Control Measures including I/M and Fuel Regs, but there are not specific program mandates like 1990
- Demonstrate Attainment by 2009/10 with Progress by 2008

Discussion of Area Boundaries

- **Clarification of the Outer Boundary Recommendation and its Basis**
- **How the EPA criteria apply to internal area boundary decisions**
- **Additional considerations for internal area boundaries from an Air Program perspective**
- **Discussion of potential outcomes based on 2003 AQ data worth evaluating for any change to the “preferred” combining of counties into defined nonattainment areas**

2000-2002 Monitored AQ Nonattainment Base - The Department's Recommendation to the Interagency Task Force



This is the Department recommendation based on 2000-2002 violations,

but,

EPA designation will be based on 2001-2003 monitored values plus EPA's contribution and consistency assessments.

Ozone Area Scope - Air Program **Perspective**

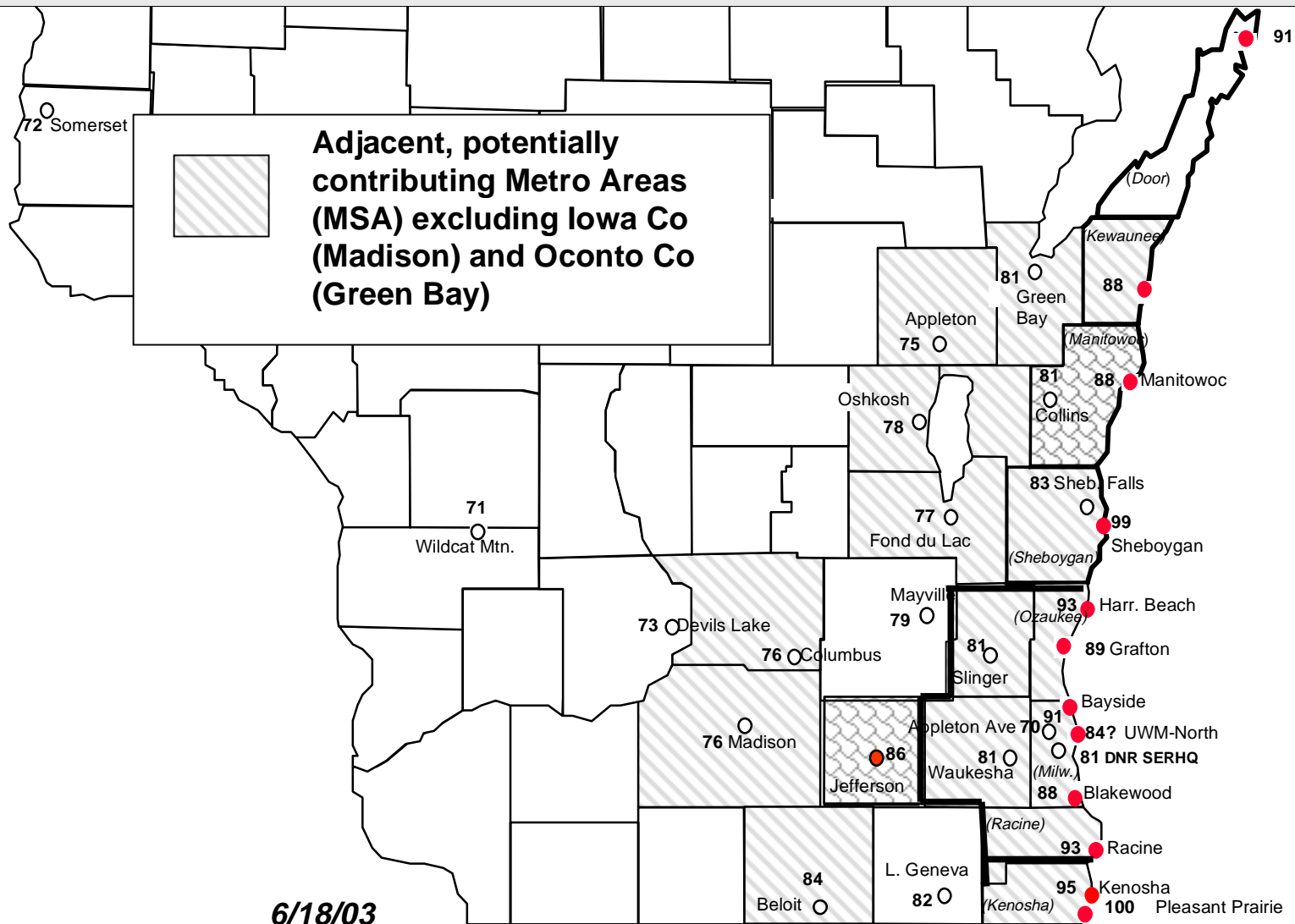
- **Define a smaller number (2 or 3) of “AQ connected” nonattainment areas rather than a single large area**
- **A successful SIP relies on having a larger area to tag for emissions reductions - narrower areas make it extremely difficult if not impossible to plan for attainment**
- **Establish a better geographic balance of emission control responsibility ... but still grounded on AQ “impact” and “benefit” to violating sites**
- **Limit the unintended & inequitable consequences of more narrow definitions like the 1990 more localized ozone designations**

Internal Area Boundaries

- **4 Options based on current identified counties**
 - Single Wisconsin Area
 - 2 Areas (Highest Preference)
 - 3 Areas (separate classification for Door Co)
 - 6 Areas (Lowest Preference)
- ⇒ ***Broaden geography to enable coherent attainment plan development***
- ⇒ ***Limit the unintended & inequitable consequences of more narrow definitions (& prevent offset problems!)***
- **Working Recommendation - 2 Discrete Areas**
 - SE Wisconsin Area (including 6 old counties plus Sheboygan and Jefferson)
 - NE Wisconsin Area (including Manitowoc, Kewaunee, Door and any 2003 counties north or west of SE area)

Popple River
68 O

Updated Metro Area Map Supporting Internal Boundary Discussions



Recommendation Decision Contingencies

- To address “hot” 2003 AQ season with new checkerboard of violating areas
- To address adequate SIP development if small area ultimately designated
- To address likely differences between ozone and PM-2.5 areas

⇒ EPA’s Basic Take on the Issues

⇒ Reiteration of the Policy Trade-Off for WI